Antares University 2011

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Antares 44^{i}

Orientation Manual

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Antares

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Chain Locker

Location of:

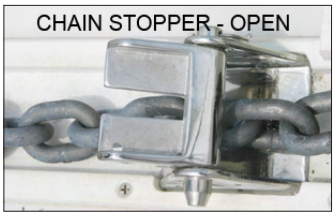
- Fresh water fill (port & starboard tanks)
- Rode
- Windlass & windlass control
- Anchor & deck wash down outlets

Chain Stopper

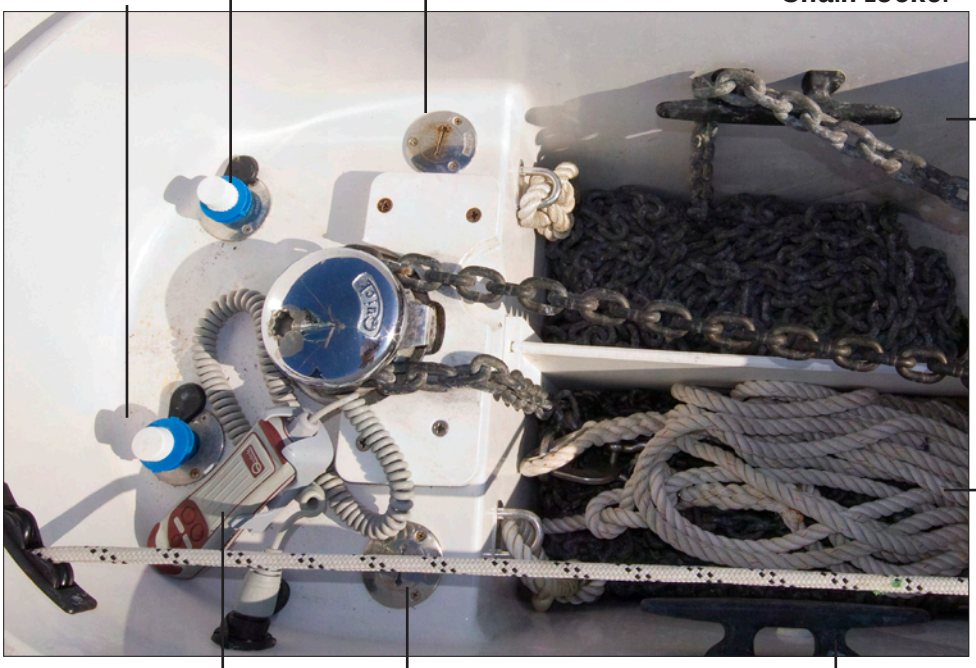
❑ To close: flip chain stopper between chain links

❑ To open: pull chain in and release. Retract anchor line to loosen the chain.

❑ Use only for securing in stowed position. Do not use chain stopper when anchored - the supplied bridle should be used.



Chain Locker


Anchor/deck wash down - (quick connect pictured)
fresh water fill / port tank
secondary anchor
main anchor
windlass control
fresh water fill / strbd tank
furling line for jib

Fresh Water Wash Down

The fresh water wash down is located in the anchor locker. The water is drawn from the selected tank and is supplied by the boat's water supply pump.

To Operate:

- ❑ Connect the deck outlet to the "quick connect" fitting that attaches to hose
- ❑ Make sure water pressure pump at main electrical distribution panel is on

Sea Water Wash Down

The sea water wash down is located in the anchor locker. The water is drawn from the sea and if supplied via a separate washdown pump.

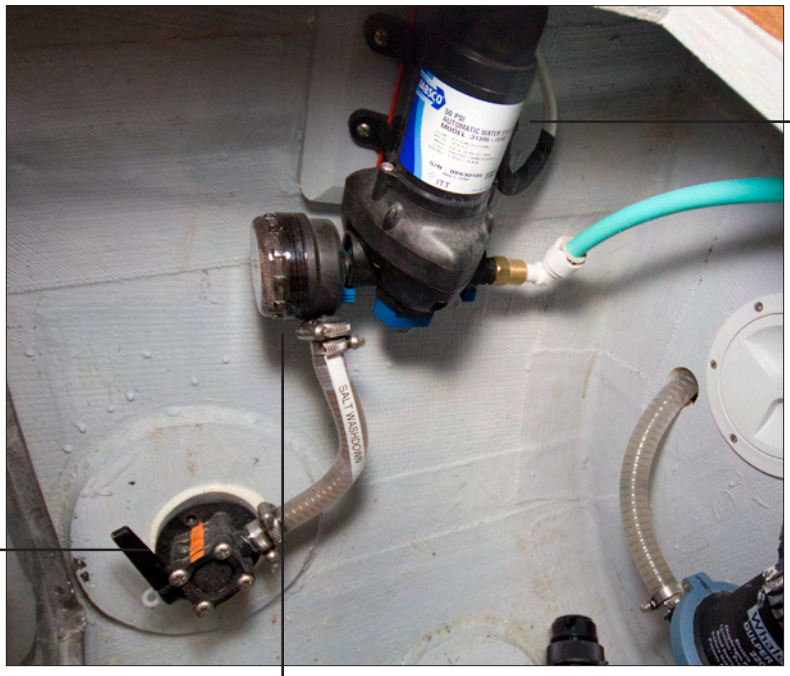
How it Works:

- ❑ Seacock is located under floorboards in port forward cabin, connects to;
- ❑ Pre-filter located in same area and connects to pump;
- ❑ Deck outlet connects to "quick connect" fitting that attaches to regular hose.

To operate: attach hose to "quick connect" fitting that attaches to regular hose. Turn the "Deck Wash" breaker **ON** at the electrical distribution panel.

NOTE: If you are losing pressure on the wash down, check filter on the wash down pump. The pump is located under the floorboards in the port forward cabin.

Sea Water Wash Down Pump *located under floorboards in port forward locker*



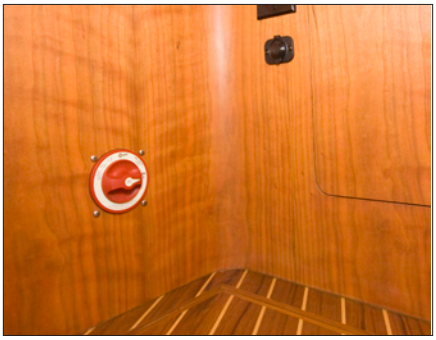
Mast Base Locker

Location of:

- Ship's service batteries
- Windlass motor
- Halyard access

Mast Base Locker

Ship's Service Batteries

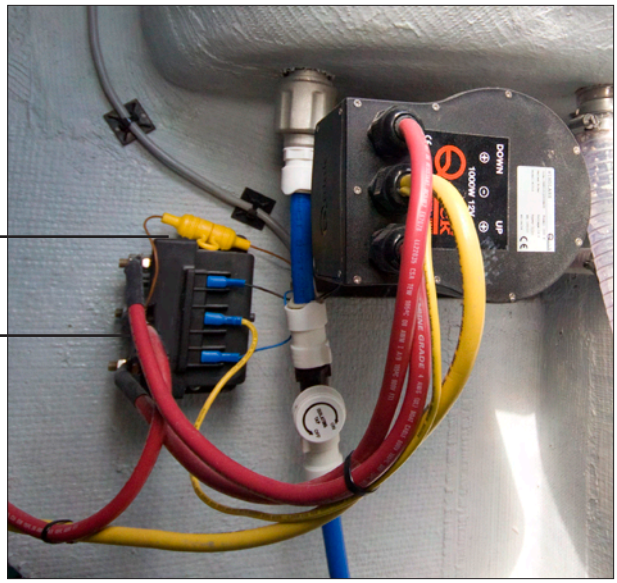


The ship service batteries are 4 x 6-volt deep discharge traction type. Check the batteries once a month and top off with distilled water as needed.

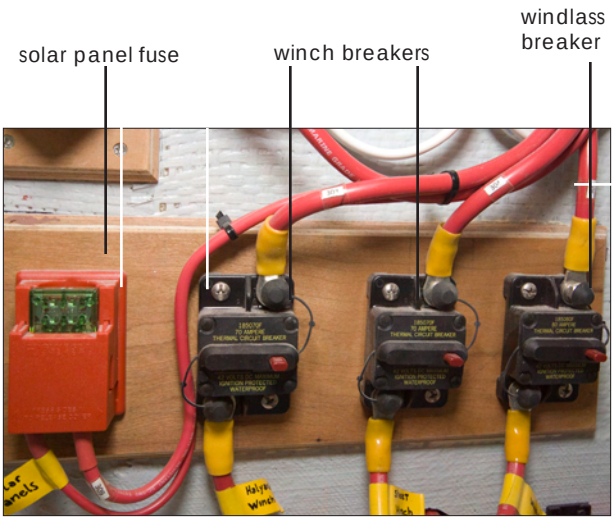
The ON/OFF switch for the batteries is located beneath the navigation station in the saloon.

Windlass Fuse & Breaker

The breaker for the windlass is located in the electrical panel cabinet next to the winch breakers and is wired to the ship service batteries.



located in the electrical panel cabinet



Port Forward Locker

Location of:

- Holding tank
- Port head plumbing

Port Forward Locker

Discharge

The seacock valve for waste discharge for the port head is located beneath the floorboard in the port forward cabin.

The seacock valve can select either deck pump out or overboard discharge. When the valve handle is horizontal to outboard hull, the tank can be evacuated using the deck pump out.

When the valve handle is turned inboard and is in line with the flow, the tank will be evacuated overboard by gravity.

In areas where discharge is prohibited, this valve should be secured in the deck pump out position (pictured on right).

located in the port forward cabin

valve is positioned for deck pump out (closed)

Entering Starboard Forward Locker

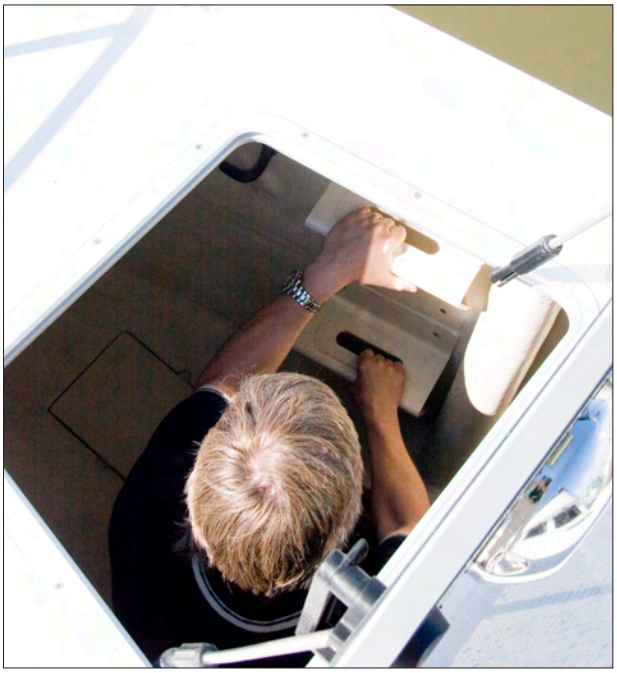
The steps on the outboard side of the compartment are designed to make access easy. Below is a step by step sequence of the best way to enter the compartment. Note how in step 4 the holes in the steps are used as hand holds.

1

2

3

4



Starboard Forward Locker

Location of:

- Generator
- Holding tank
- Starboard head plumbing

muffler

deck pump out

soundproof enclosure

shower sump pump

exhaust vent from muffler

shower drain

optional bilge pump seacock

sink drain

genset water drain from exhaust

bilge pump

deck pump out

deck/overboard discharge selector valve (closed)

from holding tank

Generator Components

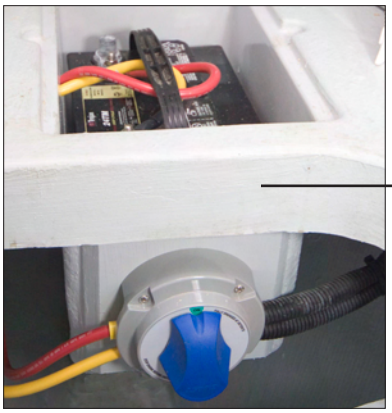
❑ The generator is encased in a soundproof compartment.

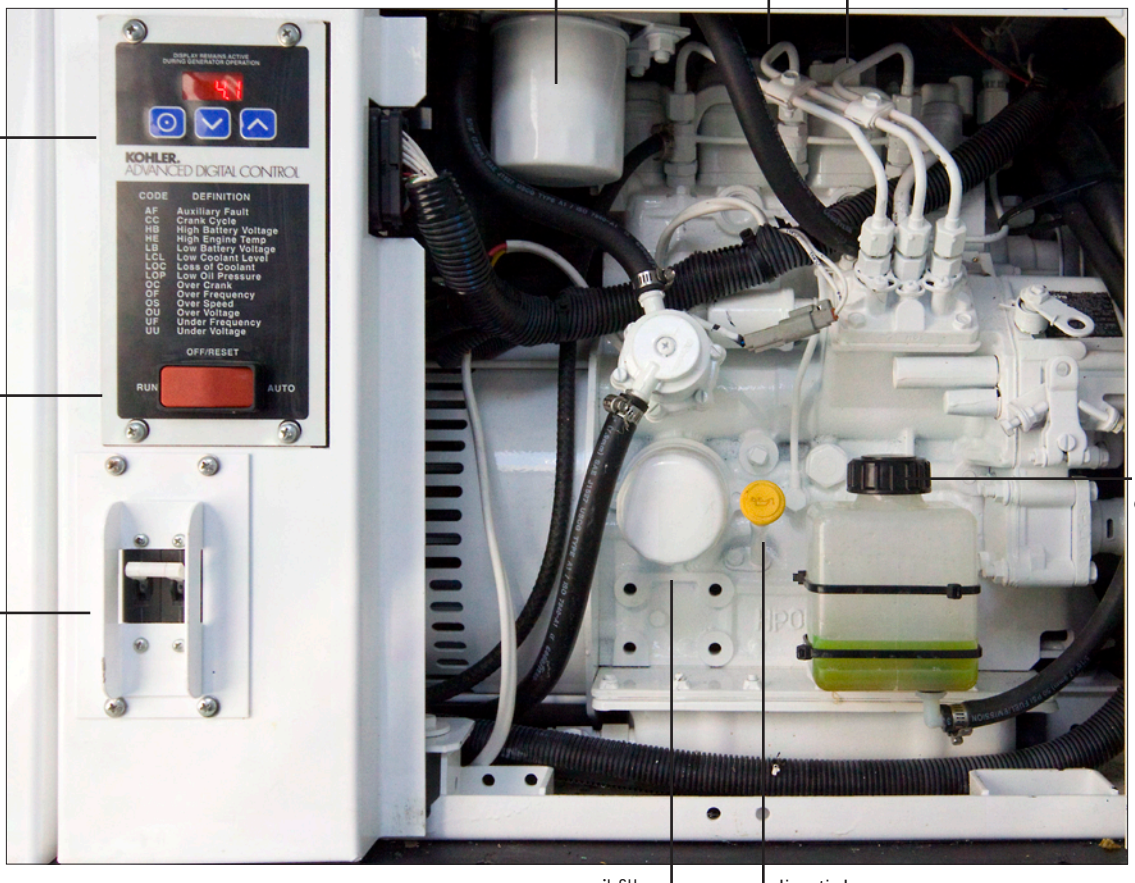
❑ Generator has a dedicated group-24 starter battery located in the forward shelf (pictured on right). Note the location of the shut off switch for the battery.

❑ The seacock for the generator is located amidships under floorboard in the starboard hull.

❑ The breaker and the control switch on the generator should be left in the ON position.

❑ Keep the breaker for the genset pump switched ON. The breaker is located behind main distribution panel (pictured on right). Note that the water pump for the generator operates on electricity produced by the generator.





How to Stow Bowsprit

1. Bowsprit in deployed position

2. Loosen halyard tension until screecher is sufficiently slack to drop toward water

3. Release the topping lift from the cam cleat and slowly lower bowsprit down toward the water

4. Pull knob on the bowsprit car and move outboard. Lock pin into position

5. Guide bowsprit in using topping lift. Pull pin release line to open hook and secure bowsprit onto the second notch on the bracket

1.

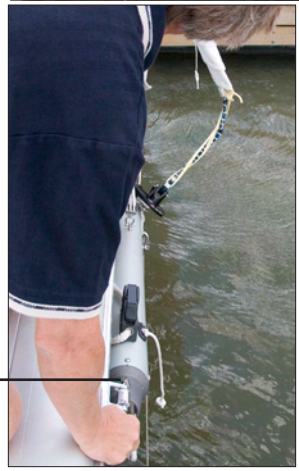
2.

3.

release topping lift from cam cleat and lower bowsprit using topping lift

NOTE: Do not leave screecher in this position for extended periods. Lower and stow if needed.

4.



5.

pull knob on car to release line, secure to second notch in bracket

How to Setup Bowsprit

1. Release bowsprit hook from bracket using Pin Release Line and slowly lower bowsprit using topping lift

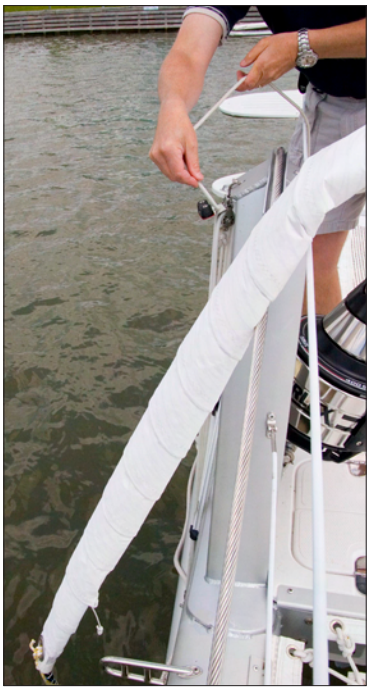
2. While one person moves the car inboard to a pre-marked position, the other person moves the bowsprit out and up. Lock car into place

3. Lift bowsprit using topping lift until stays are taut. Secure line around cam cleat

4. Tighten screecher halyard tension using winch until screecher is taut

1.

pull pin to release bowsprit

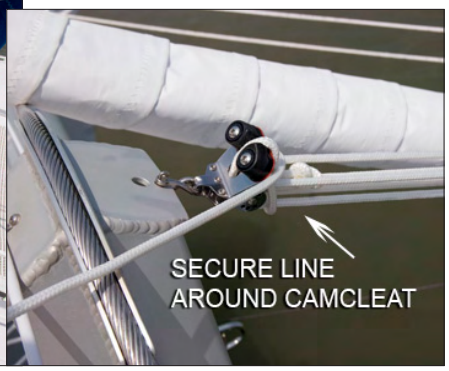


lower using topping lift

2.

3.

pull bowsprit up using topping lift



How to Lower the Dinghy

❑ Make sure rope clutches are in locked position

❑ Untie dinghy

❑ Lead both lines to winch and double wrap them clockwise. Release rope clutches and lower dinghy making sure engine doesn't bump into side of boat

NOTE: Make sure you put plug back into dinghy before lowering.

How to Raise the Dinghy

❑ Lead lines to winch and wrap them clockwise on winch. Keeping clutches closed, use winch to lift dinghy.

❑ Secure dinghy to reduce movement while underway.

Cockpit Locker

Location of:

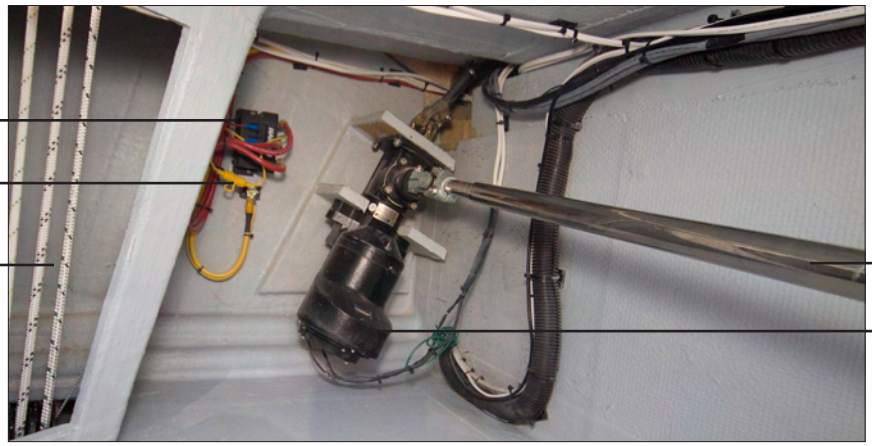
- Shaft drive steering system
- Flux gate compass
- Fridge/freezer compressors

Shaft Drive Steering System

❑ Located in cockpit locker

❑ The steering system is a shaft and gearbox system with an integrated autopilot motor. The gearbox converts rotary motion to transverse motion, which moves the tiller arm

❑ Keep area clear of clutter to allow room for drive to rotate



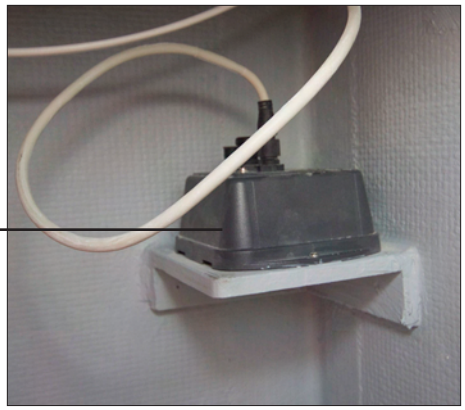
Fridge/Freezer Compressors

❑ Located in cockpit locker
❑ Compressors located behind ventilated enclosure (not pictured)
❑ Keep area around compressor clear to allow sufficient air flow

Flux Gate Compass

❑ Located in cockpit locker

❑ Provides headings to auto helm



Transom Lockers

The watertight transom lockers are typically an area where the watermaker is installed. This is also the location for the rudder connection.

Rudder Stocks/Tillers

❑ Located in transom lockers. Keep area clear of clutter to avoid fouling steering gear. Inspect connections periodically.

Emergency Tiller

❑ Tiller arm can be used with either rudder by removing the deck plate located on the transom

❑ Tiller arm is typically located in cockpit locker

Propane Tank / Rope Locker

❑ The active tank is on the port side

❑ The manual valve on the tank should be closed when the boat is unoccupied for a length of time

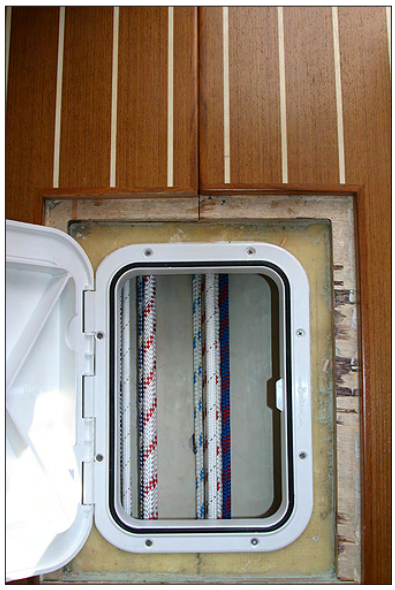
Line Access

Following are the 6 line inspection areas that run through the buit-in raceway in the bridgedeck. Check periodically to ensure lines run free and blocks are not twisted.

1. MAST BASE LOCKER

2. UNDER SETTEE IN SALOON

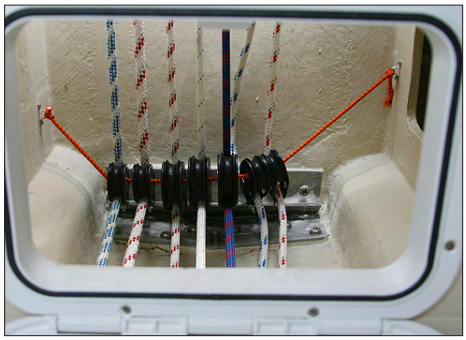
3. UNDER FLOORBOARDS IN SALOON



4. IN COCKPIT LOCKER - SHEETS LEAD TO HELM

5. IN COCKPIT LOCKER - LEADING AFT

6. IN COCKPIT LOCKER - HALYARDS LEAD TO AFT WINCH PEDESTAL



NOTE: Orange bungee cords maintain block position.

depth/speed/temp transducer

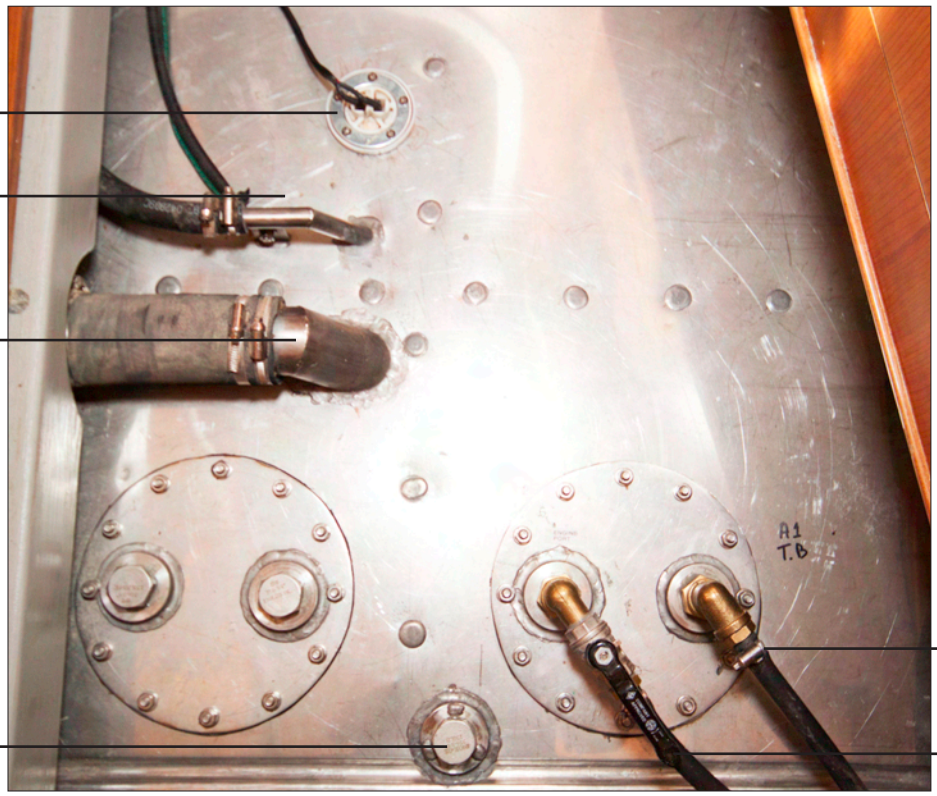
- ❑ Located under floorboards in port forward cabin
- ❑ Remove transducer to clean. Put plug in while cleaning

transducer
shower sump pump
salt water washdown pump
filter for pump
salt water washdown seacock
holding tank evacuation selector (selected for deck pump out)

Fuel Tank

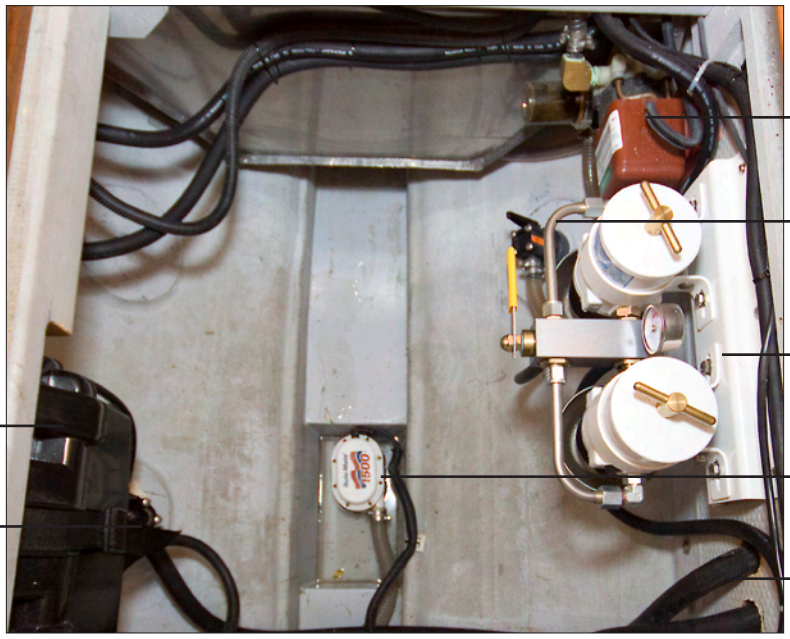
- ❑ Keep fuel pickup lines open unless servicing engine/generator

Port Fuel Tank



Engine Service Bilge

❑ Keep seacocks open unless cleaning raw water filters or leaving boat for an extended period of time. Check raw water filters regularly.


Saloon A/C pump & raw water filter
A/C seacock
fuel filters with selector valves
Engine start battery
bilge pump
engine seacock (below battery)
raw water filter for engine (pictured below) located in cupboard

Dual Racor Filter System

The engine runs off either filter. Pictured here, the forward filter is selected. The vacuum gauge should show a low reading. A high reading on the gauge is an indication that there may be an obstruction or that the filter is getting dirty. The alternate filter should be selected and the dirty filter replaced. You can select the filter while underway.

Engine Start Batteries

The start batteries are charged whenever the engine is running. They are also charged when the inverter/charger is in charging mode and the ship's service battery charging demand has been satisfied.

PORT ENGINE BATTERY SWITCH BELOW FRIDGE

STARBOARD ENGINE BATTERY SWITCH BELOW ELECTRICAL PANEL

Port Engine

Before getting underway, check both oil and coolant levels and make sure sea strainer is clear.

Port Engine

Operating the Propane Stove

TO TURN ON:

1. Make sure propane tank valve is open in aft rope locker
2. Turn breaker ON for STOVE and LPG at the 12-volt panel
3. Press LPG ON above stove
4. Turn stove top control knob on to light

TO TURN OFF:

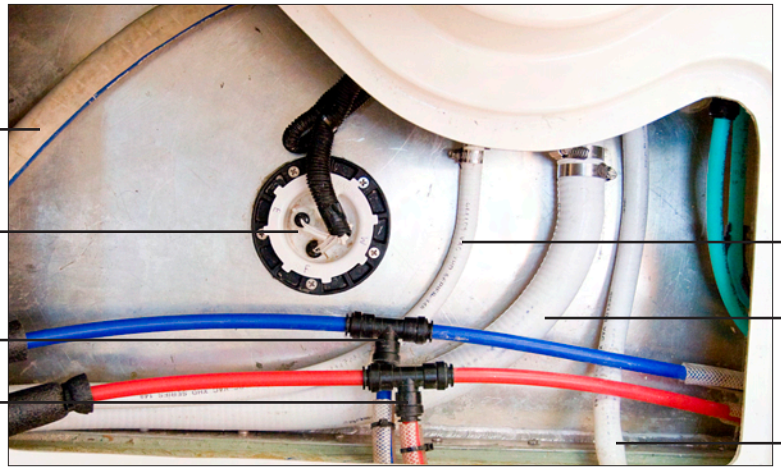
1. Turn stove top control off
2. Press LPG control off
3. Turn breakers off at 12-volt panel

NOTE: If boat is left for an extended period of time, the propane in the line will evaporate. You will need to hold down the knob on the stove for a longer period of time to turn the stove back on.

Under the floorboards:

- starboard head plumbing
- starboard water tank
- fuel tank
- engine service bilges
- generator pump & filter
- fresh water filter
- water tank selector
- hot water tank
- washing machine plumbing access
- starboard cabin AC

Starboard Head Watertank



Using the Electric Head

Make sure the FRESH WATER PUMP and ELECTRIC HEAD breakers are switched on at the electrical panel before use.

VERSION NUMBER ONE:

❑ Press top button to FLUSH

Top button flushes and evacuates bowl to holding tank.

VERSION NUMBER TWO:

❑ Add water using FILL bowl button on bottom left

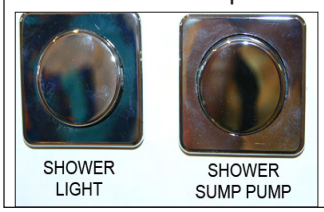
❑ Press top button to FLUSH

❑ EMPTY bowl by pressing bottom right button

NOTE: To avoid blockages, use biodegradable marine-grade single-ply toilet paper.

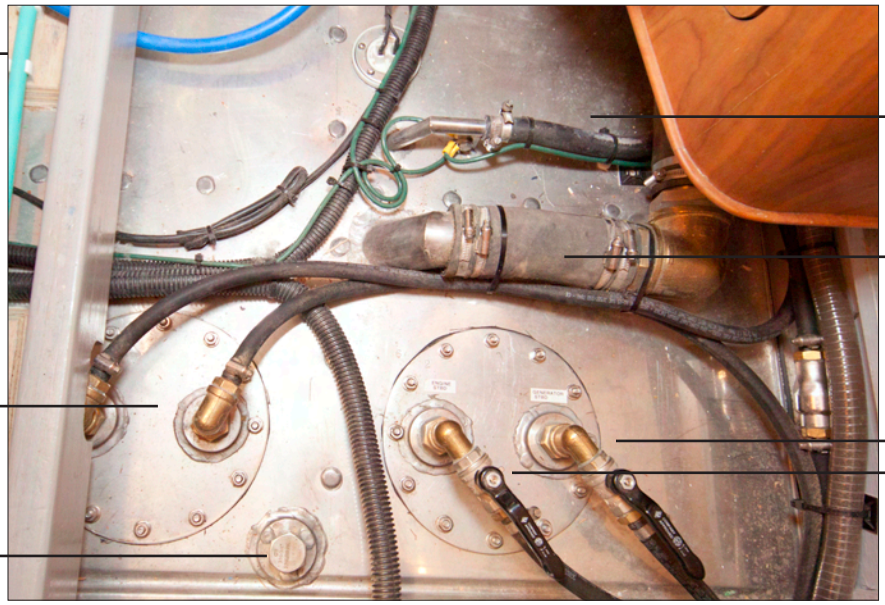
Using the Shower

When showering - make sure SHOWER SUMP PUMP is switched ON and the SUMP PUMP breaker is turned ON at the electrical panel.



Fuel Tank

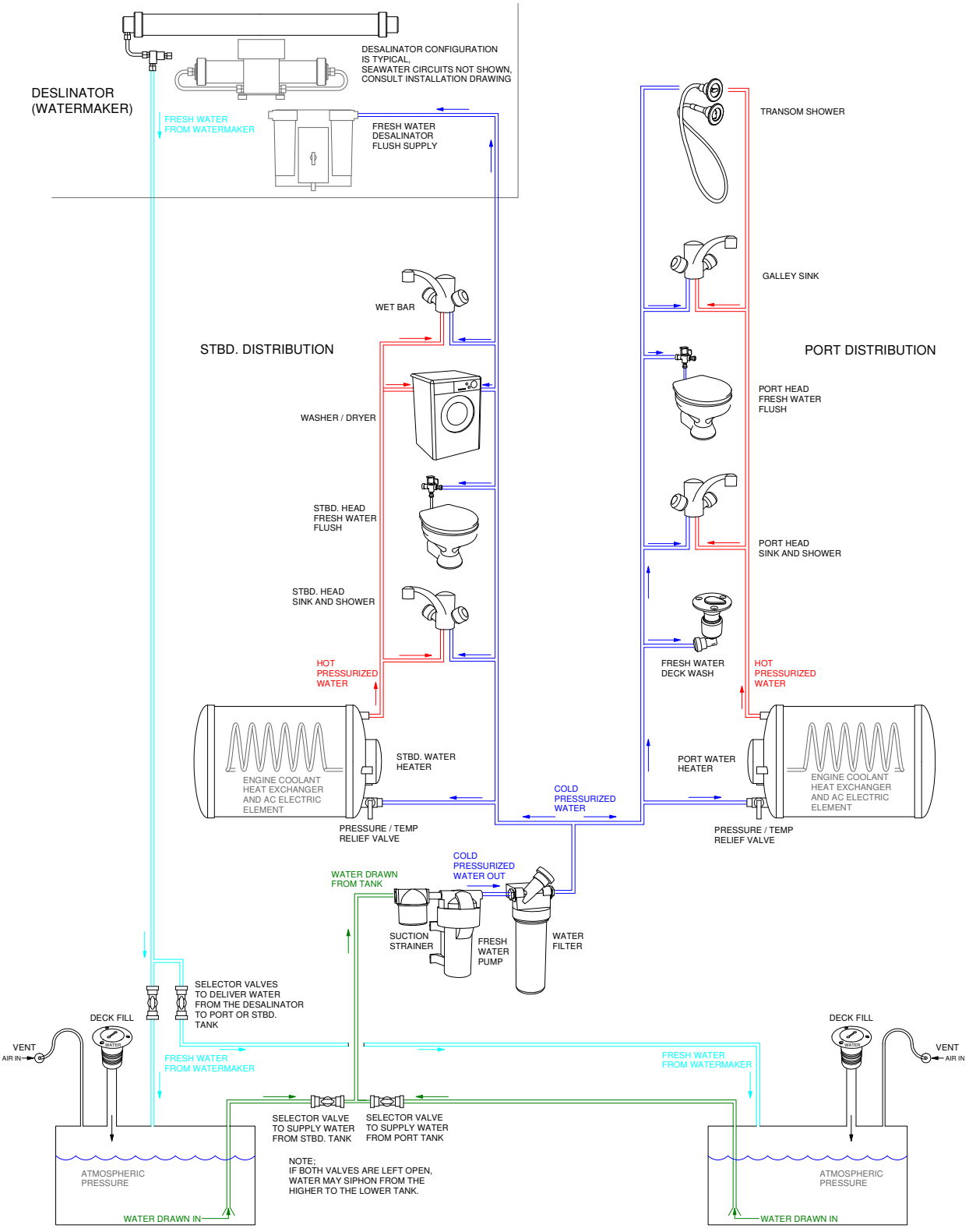
- ❑ Keep fuel pickup lines open unless servicing engine/generator


fuel gauge
fuel vent
fuel fill
engine / generator fuel return
tank stripping fitting attached to tube hose at bottom of tank
engine / generator fuel pick up

Engine Service Bilge

- ❑ Keep seacocks open unless cleaning filters or leaving boat for an extended period of time.

Fresh Water Piping Diagram

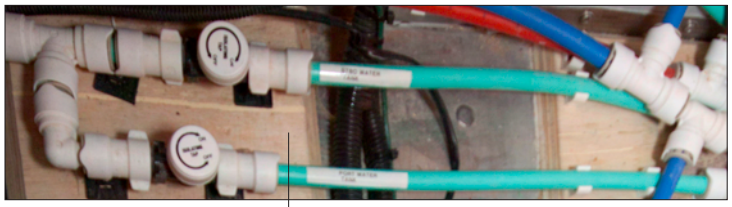


Fresh Water Plumbing - Tank Selector

❑ Port and starboard fresh water intake is located in forward anchor locker on foredeck

❑ Water tank selector is located under starboard floorboards on the inboard side below electrical panel

❑ You can draw from one tank at a time. The tank is selected when the valve is in-line with the hose. Only one valve should be open at one time to stop air from filling the lines and to maintain tank separation and possible contamination.



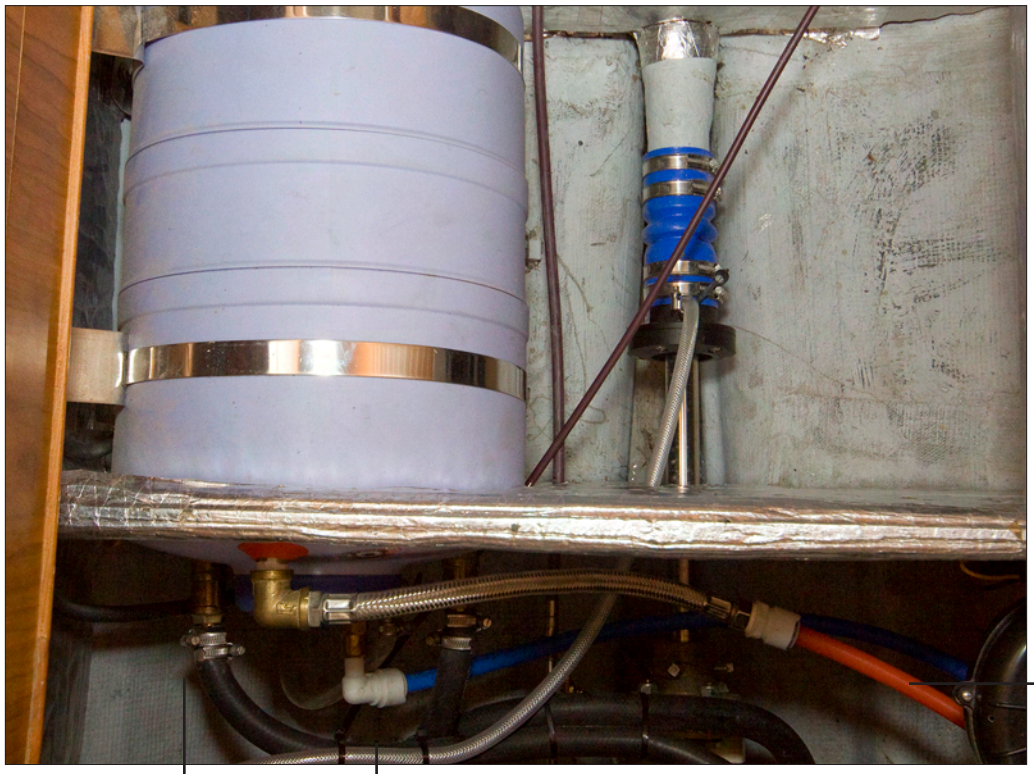
water tank selectors

Hot Water Tank

❑ When the engines are running, they heat up the water by circulating coolant in the tank. The tank is also heated with an electric element. Turn breaker ON at electrical panel.

❑ The water pump delivers pressurized water to both water heaters. Each hot water tank services one side of the vessel.

Starboard Hot Water Tank



hot water out

engine coolant

cold water in

Washing Machine Plumbing Access

Access to washer/dryer service is through a removable access panel in the starboard closet.

The thru hull for the washer is located beneath the escape hatch window in the master cabin, next to the wetbar sink thru hull.

Thruhulls for washing machine / wetbar sink

Access to Washer/Dryer Service

Shore Power Breakers

Breakers are in accordance with ABYC standards which stipulates that breakers need to be installed if the distance from the shore power outlet to the panel exceeds 10-feet. These breakers are located in the service locker in the master cabin. Leave breakers switched ON.

located in the service locker at the foot of the bed in the master cabin

Saloon A/C Unit

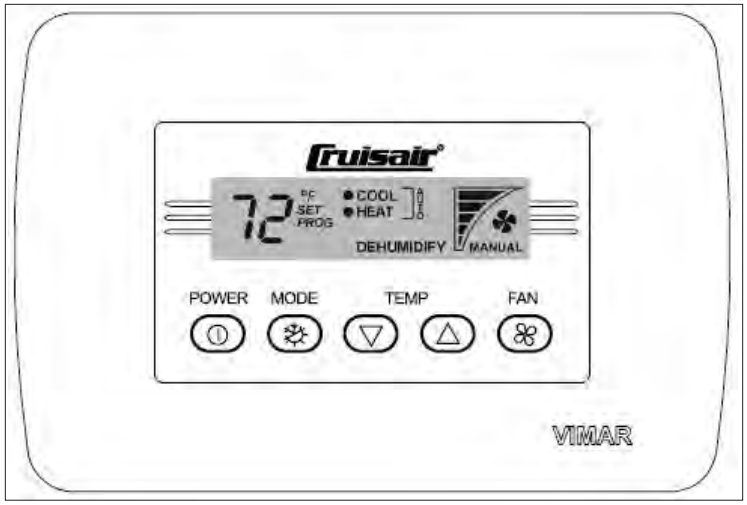
- ❑ The A/C unit is located beneath the saloon settee. The filters and seacock are located beneath the port floorboard in galley
- ❑ Make sure seacock is open when operating the A/C unit
- ❑ A/C condensation drains overboard via an inboard thruhull

NOTE: Clean water filter on the air conditioning system regularly. MAKE SURE TO CLOSE THE SEACOCK BEFORE CLEARING RAW WATER FILTER. Check vent screens periodically and replace screen if clogged with dust.

Port & Starboard Cabin A/C Units

- ❑ Water filter & seacock located beneath floorboard
- ❑ Condensation from the A/C drains into the bilge well

Air Conditioner System Control Panel



NOTE: the air conditioning system requireS either shore power or the generator for operation.

NOTE: Wait a few minutes before turning air conditioning unit back on after shutting off.

OPERATION PROCEDURE FOR SMXht KEYPAD/ DISPLAY:

There are 3 AC control panels onboard. The panel for the main living area is located at the control panel, one is in the aft guest cabin and one is in the master cabin.

Turning On and Off:

Press the POWER or MODE keys to turn the system on. It will default to the mode it was running prior to the last shut down.

Mode:

Press MODE to change the mode while the system is on. Modes are Cool, Heat or Dehumidification Mode.

Setting the Temperature:

Press UP or DOWN arrow keys to set the temperature - The word SET will appear in the display. After 3 seconds, the display will automatically revert back to showing the inside cabin temperature.

Fan Speed

The FAN key adjusts the fan speed while in Manual Speed Mode and switches from Manual to Automatic. You can run the fan manually whether the system is on or off.

Dimming the Display

Press the MODE and UP arrow keys simultaneously and repeatedly to select the display brightness setting.

See Cruisair operating manual for complete programming instructions.

Power Sources

- ❑ 120 Volt AC
  - Shore Power
  - Generator
  - Inverter
- ❑ 12 Volt DC
  - Engine Alternators
  - Battery Charger
  - Solar Panels

We commonly use 120 volt alternating current (ac) power on board to supply household type equipment and 12 volt direct current (dc) for ship's operational loads.

We use dc power because it can be easily stored in batteries, unlike ac power which has to be generated on demand. The batteries should be considered as a storage system rather than a primary source.

120 Volt AC Power

❑ **SHORE POWER**

Our vessels are typically "plugged in" to a shore power outlet with 30 amp capability. At the dock, we have about 7% of the power available to most homes. To support the heaviest loads for applications such as air conditioning, we have 2 x 30 amp shore power cords.

Shore Power

Each cord supplies the boat with 30 amps. Shore Power 1 (bottom plug) should be connected first. For safety reasons, the cord will only attach one way.

To attach cord: plug, turn and screw on locking ring.

NOTE: To avoid electrical hazards, always plug boat in first before plugging in shore power.

❑ **GENERATOR**

The 6 kW generator provides approximately 10% of the household power described above and about 1.6 times the power of one 30 amp shore cord, enough to power the vessel under normal circumstances.

❑ **INVERTER**

Takes 12 volt dc power from the ships batteries and converts it, with some losses, into 120 volt ac power. The use of an inverter is confined to short duration heavy loads such as microwave ovens or longer term light loads such as entertainment systems, (***not air conditioning***).

Successful operation of the inverter requires some appreciation of the controls to avoid the accidental discharge of the ship's service battery bank.

12 Volt DC Sources

❑ **ENGINE ALTERNATORS**

Use rotational power from the engine to produce 12 volt dc power. This is available for use whenever the engine is running and any surplus beyond what is used for the engine control and monitoring functions goes to recharge the batteries.

❑ **BATTERY CHARGER**

The battery charger converts 120 volt ac power from the shore or gen. set to 12 volt dc, with the surplus going to recharge the batteries.

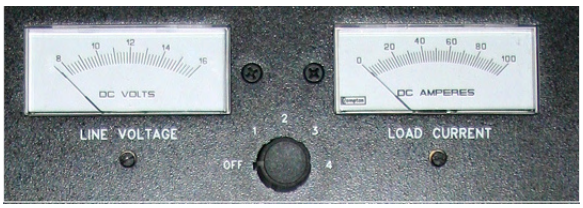
❑ **SOLAR**

Provide maintenance level charging adequate to sustain some low consumption equipment and keep the batteries charged. 50 watts per panel, on a bright day, produce about 4 amps each. An array of four may produce a maximum of 16 amps as long as the sun shines.

Testing Your Batteries

You can test your batteries using the Voltage Meter (pictured below). The numbers coincide with the following batteries:

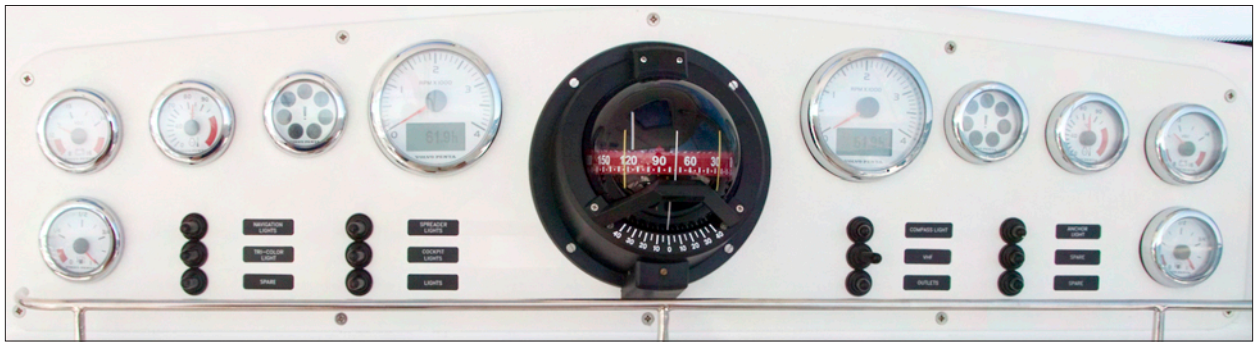
1 - house: four 6-volt deep-cycle batteries - on/off switch located under the nav seat
2 - port engine
3 - starboard engine
4 - generator

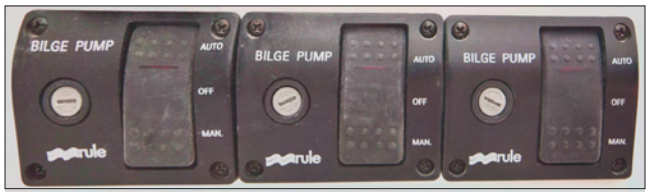


Voltage Meter - A fully charged battery will read approximately 12.8 volts with no loads connected. While charging, the voltage will be in the range of 13.8 to 14.2 volts. If the voltage drops below 12-volts, your batteries will need to be charged.

The 12 Volt Helm Panel

Allows you to operate your electronics, instrument gagues, wipers and cockpit lighting. Make sure panel breaker is **ON** on the main panel.





NOTE: Always keep BILGE PUMP on - make sure 12 volt breaker is switched ON. Bilge pumps are normally set on AUTO. For manual operation, hold switch down. When finished, re-set to AUTO.

Basics of Operating the Inverter / Charger using the Control Panel

Masterlink MICC Mass Inverter Charger Control

The Masterlink MICC panel gives you three basic functions:

1. Remote control of the battery charger
2. Remote control of the inverter
3. Retrieving information on your batteries

CHARGER

Press the CHARGER buttom to turn on or off. After a few seoconds, the CHARGER LED illuminates. The "**AC-present**" LED also illuminates.

The LED display lights at the bottom of the panel will illuminate and display the following information:

Bulk
The batteries are being charged at their maximum rate. Most of the charging in occurring during this function.

Absorption
The batteries are being finish charged over a longer period of time at a lesser rate. Charging will continue with decreasing current until the batteries are full - about 85% + reading.

Float
The batteries are "trickle charged" to keep them fully charged. You are unlikely to see this condition with any load connected.

Mastervolt unit is located underneath settee in saloon. Keep the charger in with the ON or CH position for normal operation.

INVERTER

Press the INVERTER switch to make the invert function available. This will automatically deliver AC power to the dedicated AC breakers on the main panel in the absence of shore or generator power. Leave this function off to avoid inadvertently discharging your batteries. The Inverter LED illuminates when in operation.

MONITORING YOUR BATTERIES

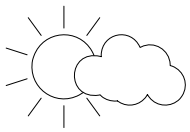
Volt-Amp
Press button to display main battery voltage and current. If battery is charged, it will display "VOLT & CHG.AMP" if being discharge, it will display "VOLT & DIS.AMP".

Ah-Time
Press button once to display state of charge as a percentage of the installed battery capacity. The standard battery capacity installed is 780 amp hours.
Press button a second time to display how long the battery can be used before it will be empty.
Press button a third time to display how many amp hours have been used from the battery.

NOTE: Try to maintain maximum charge in batteries whenever convenient to avoid sulfation of the plates and eventual capacity degradation.

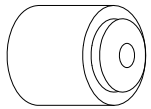
USING A GENERATOR TO SOLELY CHARGE THE BATTERIES AT LOW CHARGE RATES IS NOT VERY EFFICIENT. THE LAST 20% MAY TAKE 3-4 HOURS OR MORE.

TWO POWER SYSTEMS ON BOARD



SOLAR PANELS

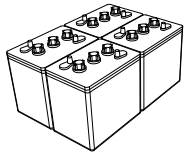
SOURCES FOR 12VDC



12V ENGINE ALTERNATORS

THE DC SYSTEM IS DESIGNED TO "FAIL SAFE" TO THE EXTENT POSSIBLE AND PREVENT INADVERTENT DISCHARGE OF THE START BATTERIES.

POWER STORAGE



BATTERIES

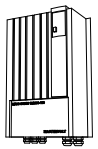
TYPICAL APPLICATIONS:
ENGINE SYSTEMS
NAV EQUIPMENT
LIGHTING
PUMPS
WINCHES

12VDC DOES NOT CONSTITUTE A SHOCK HAZARD AND CAN BE STORED IN BATTERIES

ENGINE POWER SYSTEMS DERIVED FROM THE VEHICLE MARKET ARE READILY AVAILABLE AND SUPPORTED

LARGE CABLING AND HEAVY MOTORS ARE REQUIRED FOR INTERMITTENT HIGHER LOADS

CHARGER



12VDC / 120VAC INTERFACE

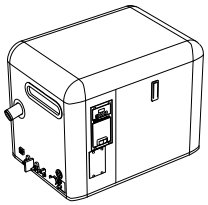
CHARGER / INVERTER

CRITICAL VESSEL SYSTEMS THAT REQUIRE POWER AT SEA ARE 12VDC

DOMESTIC VESSEL SYSTEMS THAT MAY BE OPTIONALLY POWERED AT SEA ARE 120VAC

INVERTER

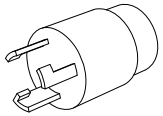
THE AC SYSTEM IS DESIGNED TO AVOID SHOCK HAZARDS



120 VOLTS AC GENERATOR SET

SOURCES FOR 120VAC

TYPICAL APPLICATIONS:
AIR CONDITIONING
WATER HEATING
GALLEY APPLIANCES
BATTERY CHARGING



120 VOLTS AC SHORE POWER

NOTE, LARGE CAPACITY DESALINATORS MAY ALSO BE POWERED BY 120VAC DUE TO THE HIGH MOTOR LOADS

120VAC MAY CONSTITUTE A SHOCK HAZARD AND CAN NOT BE STORED IN BATTERIES BUT:

MODERATE CABLING AND MOTORS WILL OPERATE SUSTAINED HIGHER POWER LOADS

DOMESTIC SYSTEMS DERIVED FROM THE HOME MARKET ARE READILY AVAILABLE AND SUPPORTED

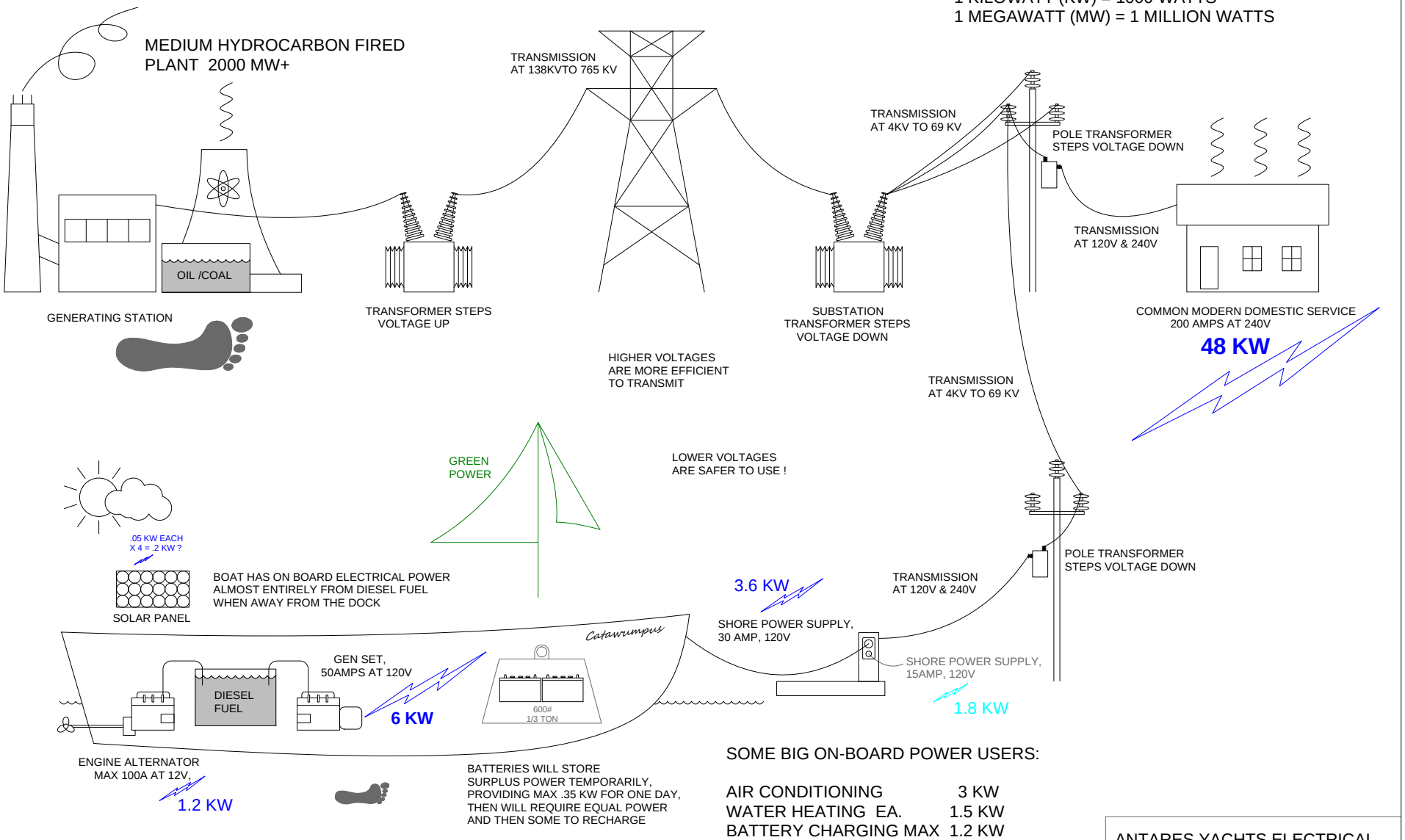
ANTARE YACHTS ELECTRICAL
TWO POWER SYSTEMS DIAGRAM
EL-04-21 MAY 12, 2009

ANTARES YACHTS ILLUSTRATES THE RELATIVE DIFFICULTIES OF PROVIDING DOMESTIC LEVEL ELECTRICAL POWER ON BOARD
OR
"HOW I LEARNED TO EMBRACE MY GEN SET"

POWER AVAILABLE IS A FUNCTION OF THE ELECTRICAL POTENTIAL x THE CURRENT FLOW,
VOLTS x AMPS = WATTS

TRANSMISSION AND WORKING EFFICIENCY GOES UP WITH
HIGHER VOLTAGE / LOWER CURRENT

1 KILOVOLT (KV) = 1000 VOLTS
1 KILOWATT (KW) = 1000 WATTS
1 MEGAWATT (MW) = 1 MILLION WATTS


MEDIUM HYDROCARBON FIRED PLANT 2000 MW+
OIL /COAL
GENERATING STATION
TRANSFORMER STEPS VOLTAGE UP
TRANSMISSION AT 138KVTO 765 KV
HIGHER VOLTAGES ARE MORE EFFICIENT TO TRANSMIT
SUBSTATION TRANSFORMER STEPS VOLTAGE DOWN
TRANSMISSION AT 4KV TO 69 KV
POLE TRANSFORMER STEPS VOLTAGE DOWN
TRANSMISSION AT 120V & 240V
COMMON MODERN DOMESTIC SERVICE 200 AMPS AT 240V
48 KW
TRANSMISSION AT 4KV TO 69 KV
LOWER VOLTAGES ARE SAFER TO USE !
GREEN POWER
.05 KW EACH X 4 = .2 KW ?
SOLAR PANEL
BOAT HAS ON BOARD ELECTRICAL POWER ALMOST ENTIRELY FROM DIESEL FUEL WHEN AWAY FROM THE DOCK
3.6 KW
SHORE POWER SUPPLY, 30 AMP, 120V
TRANSMISSION AT 120V & 240V
POLE TRANSFORMER STEPS VOLTAGE DOWN
Catawumpus
GEN SET, 50AMPS AT 120V
DIESEL FUEL
6 KW
600# 1/3 TON
SHORE POWER SUPPLY, 15AMP, 120V
1.8 KW
ENGINE ALTERNATOR MAX 100A AT 12V,
1.2 KW
BATTERIES WILL STORE SURPLUS POWER TEMPORARILY, PROVIDING MAX .35 KW FOR ONE DAY, THEN WILL REQUIRE EQUAL POWER AND THEN SOME TO RECHARGE

SOME BIG ON-BOARD POWER USERS:

AIR CONDITIONING	3 KW
WATER HEATING EA.	1.5 KW
BATTERY CHARGING MAX	1.2 KW
MICROWAVE	1.5 KW

ANTARES YACHTS ELECTRICAL
RELATIVE POWER DIAGRAM
EL-04-22 MAY 12, 2009

ANTARES YACHTS ELECTRICAL
GENERATOR SET DIAGRAM
EL-04-20 MAY 12, 2009

SEE ALSO:
POWER FLOW DIAGRAMS
EL-04-14 FOR THE GEN SET'S INTERACTIONS WITH THE VESSEL'S OTHER ELECTRICAL SYSTEMS

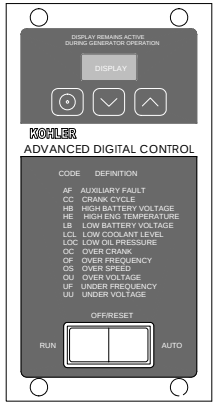
THE GENERATOR SET

NOTE:
ELECTRICITY AD CAMPAIGN SPOKESMAN WAS - R. REAGAN!

KOHLER 6EOD GEN SET WITH SOUND SHIELD

SERVICE ACCESS DOOR

CONTROL PANEL

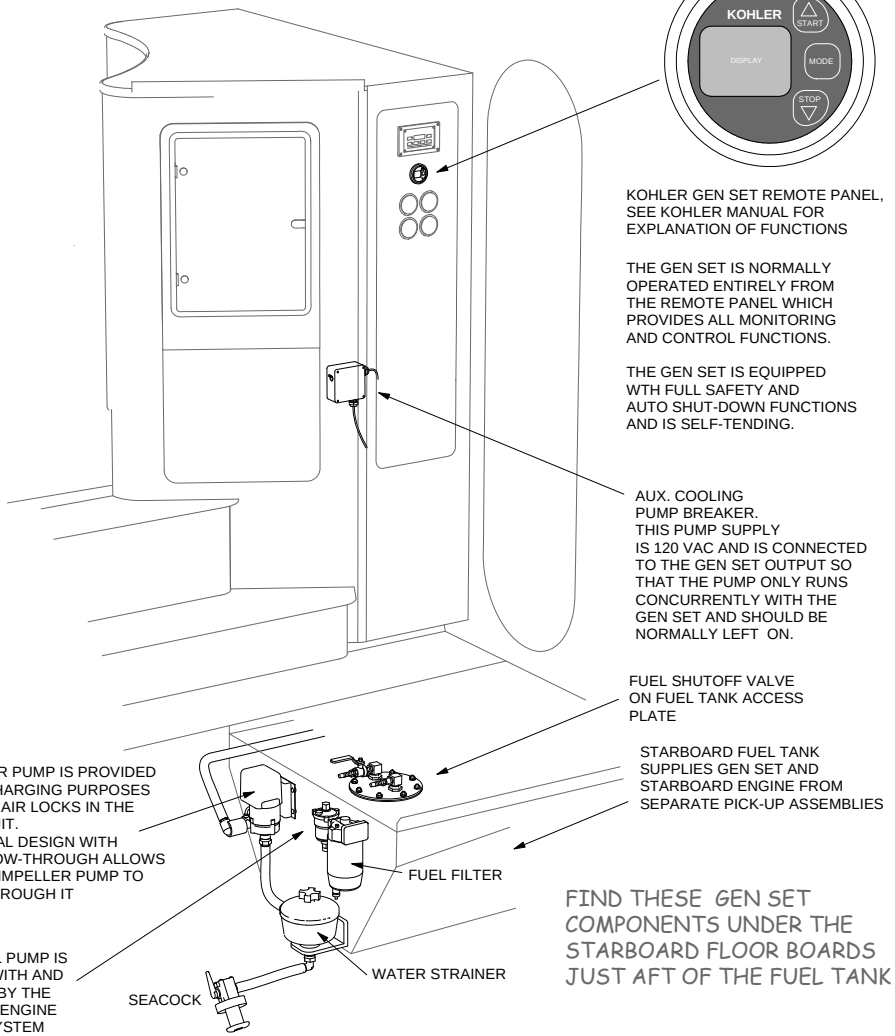


FIND THE GEN SET IN THE STBD. FOREPEAK

THE GEN SET ENGINE OPERATES WITH A 12 VDC SYSTEM FOR ITS START/STOP CONTROL AND MONITORING, AS DO THE PROPULSION ENGINES. IT HAS ITS OWN BATTERY AND ALTERNATOR TO MAINTAIN THE SYSTEM WHICH IS EXCLUSIVE TO THE GEN SET.

BATTERY SWITCH

GEN SET START BATTERY



KOHLER GEN SET REMOTE PANEL, SEE KOHLER MANUAL FOR EXPLANATION OF FUNCTIONS

THE GEN SET IS NORMALLY OPERATED ENTIRELY FROM THE REMOTE PANEL WHICH PROVIDES ALL MONITORING AND CONTROL FUNCTIONS.

THE GEN SET IS EQUIPPED WTH FULL SAFETY AND AUTO SHUT-DOWN FUNCTIONS AND IS SELF-TENDING.

AUX. COOLING PUMP BREAKER. THIS PUMP SUPPLY IS 120 VAC AND IS CONNECTED TO THE GEN SET OUTPUT SO THAT THE PUMP ONLY RUNS CONCURRENTLY WITH THE GEN SET AND SHOULD BE NORMALLY LEFT ON.

FUEL SHUTOFF VALVE ON FUEL TANK ACCESS PLATE

STARBOARD FUEL TANK SUPPLIES GEN SET AND STARBOARD ENGINE FROM SEPARATE PICK-UP ASSEMBLIES

THE AUX. WATER PUMP IS PROVIDED FOR SYSTEM CHARGING PURPOSES AND PREVENTS AIR LOCKS IN THE COOLING CIRCUIT. ITS CENTRIFUGAL DESIGN WITH UNIMPEDED FLOW-THROUGH ALLOWS THE GEN SET'S IMPELLER PUMP TO PULL WATER THROUGH IT AS REQUIRED.

FUEL FILTER

THE AUX. FUEL PUMP IS CONNECTED WITH AND CONTROLLED BY THE 12 V. GEN SET ENGINE OPERATING SYSTEM

WATER STRAINER

SEACOCK

FIND THESE GEN SET COMPONENTS UNDER THE STARBOARD FLOOR BOARDS JUST AFT OF THE FUEL TANK

DUE TO THE HIGH GEN SET MOUNTING LOCATION AND ITS DISTANCE FROM THE FUEL TANK, AUXILIARY FUEL AND COOLING WATER PUMPS ARE PROVIDED. THE WATER PICKUP POINT IS AFT WHERE IT IS MORE LIKELY TO STAY IMMERSED WHILE SAILING

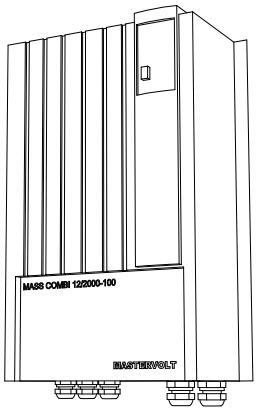
WHAT IT DOES

THE GENERATOR SET USES A DIESEL ENGINE TO PRODUCES 120 VAC POWER FOR USE IN THE DOMESTIC SERVICES ON BOARD.

IT ALSO SUPPLIES 12 VDC POWER INDIRECTLY VIA THE BATTERY CHARGER TO SUPPLY THE SHIP'S 12 VOLT SYSTEMS AND RECHARGE THE BATTERIES.

THE CHARGER / INVERTER

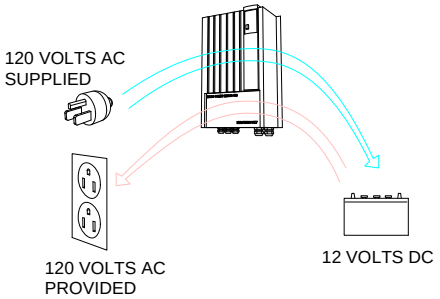
AN ON-BOARD PUSH-ME-PULL-YOU



WHAT DOES IT DO?

1) WHEN IN CHARGING MODE,
IT TAKES 120VOLT AC POWER FROM THE SHORE POWER OR GENERATOR AND USES IT TO CREATE 12VOLT DC POWER TO SUPPLY THE 12V SHIP'S LOADS AND RECHARGE BATTERIES .
IT HAS VERY SOPHISTICATED SENSING AND ADJUSTING CIRCUITS TO REFINE THE OUTPUT VOLTAGE TO SUIT THE BATTERY TYPE AND STATE OF CHARGE.

2) WHEN IN INVERTING MODE,
IT TAKES 12 VOLT DC POWER FROM THE SHIP'S SERVICE BATTERIES AND USES IT TO CREATE A REFINED 120 VOLT AC OUTPUT SUITABLE FOR USE BY DOMESTIC EQUIPMENT AND ENTERTAINMENT ELECTRONICS.

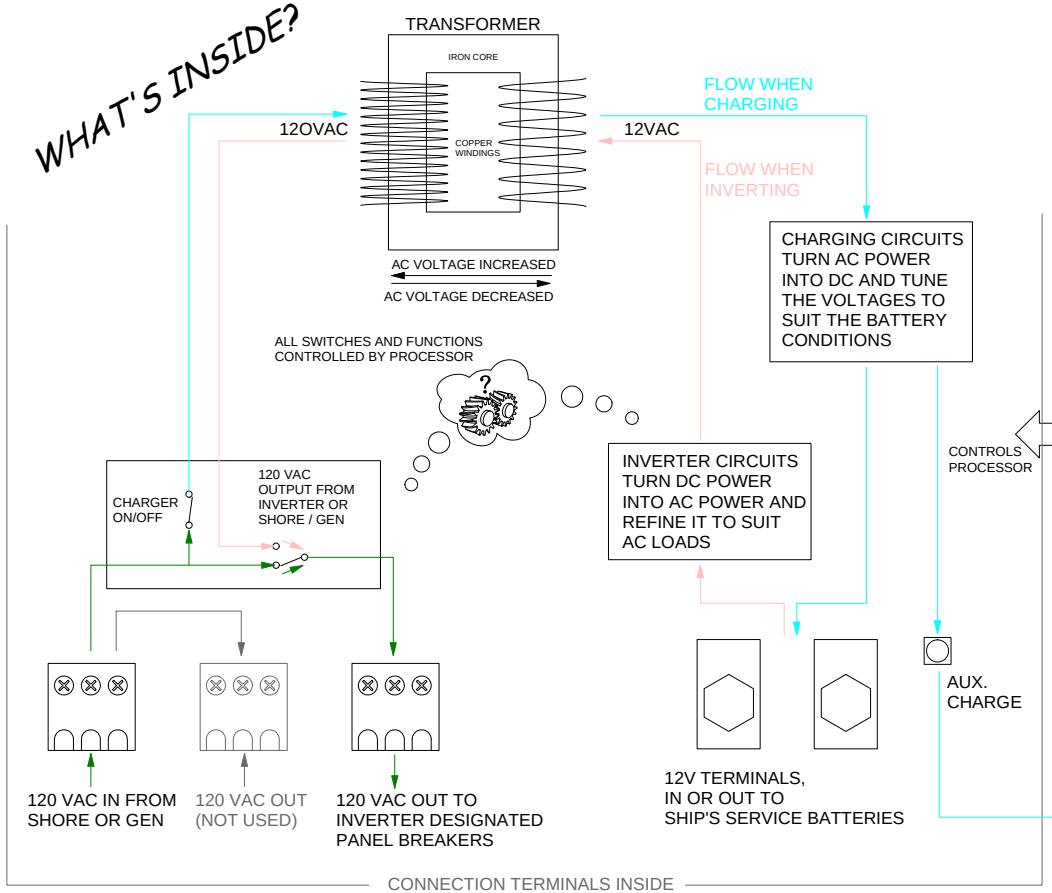


WHY INTEGRATE THE FUNCTIONS?

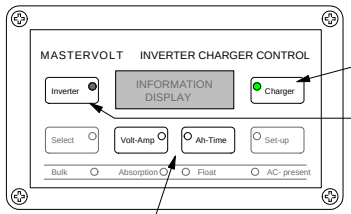
YOU HAVE TO HAVE A CHARGER BUT AN INVERTER IS A LUXURY, HOWEVER FOR A MODEST ADDITIONAL COST, THE INVERTER FUNCTION CAN BE TAGGED ON.

THE HEAVY AND COSTLY PRIMARY COMPONENT COMMON TO BOTH FUNCTIONS IS THE TRANSFORMER. IT WOULD HAVE TO BE DUPLICATED IN SEPARATED UNITS AND THEY WOULD NEVER FUNCTION CONCURRENTLY. AT ANY GIVEN TIME, ONE WOULD BE GOING ALONG FOR THE RIDE. INVERTERS MAKE HUGE DEMANDS ON BATTERY CAPACITY AND CONSEQUENTLY REQUIRE LARGE RECHARGING CAPACITY. INTERGRATED UNITS TEND TO HAVE CORRESPONDINGLY HIGHER THAN NORMAL CHARGE CAPACITY.

WHAT'S INSIDE?


TRANSFORMER
IRON CORE
COPPER WINDINGS
12OVAC
12VAC
FLOW WHEN CHARGING
FLOW WHEN INVERTING
AC VOLTAGE INCREASED
AC VOLTAGE DECREASED
CHARGING CIRCUITS TURN AC POWER INTO DC AND TUNE THE VOLTAGES TO SUIT THE BATTERY CONDITIONS
ALL SWITCHES AND FUNCTIONS CONTROLLED BY PROCESSOR
INVERTER CIRCUITS TURN DC POWER INTO AC POWER AND REFINE IT TO SUIT AC LOADS
CONTROLS PROCESSOR
CHARGER ON/OFF
120 VAC OUTPUT FROM INVERTER OR SHORE / GEN
AUX. CHARGE
120 VAC IN FROM SHORE OR GEN
120 VAC OUT (NOT USED)
120 VAC OUT TO INVERTER DESIGNATED PANEL BREAKERS
12V TERMINALS, IN OR OUT TO SHIP'S SERVICE BATTERIES
CONNECTION TERMINALS INSIDE

THE INVERTER/CHARGER REMOTE PANEL IS INTEGRATED WITH THE BATTERY MONITORING SYSTEM



THE CHARGE MODE IS NORMALLY ON AND ANY TIME THERE IS 120VAC POWER AVAILABLE FROM THE SHORE OR GEN SET THE CHARGER WILL BE ACTIVE

WITH INVERT MODE ON, THE PROCESSOR WILL ENGAGE THE INVERTER FUNCTION AND DRAW POWER FROM THE BATTERIES. HOWEVER, IF POWER IS AVAILABLE AT THE 120 VAC INPUT, THAT POWER WILL BE AUTOMATICALLY CARRIED THROUGH BY PREFERENCE. NORMALLY THIS FUNCTION IS OFF TO AVOID INADVERTENTLY DISCHARGING THE BATTERIES IN THE EVENT THAT THE SHORE POWER IS ACCIDENTLY KNOCKED OFF

BATTERY MONITOR FUNCTIONS ESTIMATES BATTTERY USAGE AND POWER REMAINING

SECONDARY 5A. MAX. CHARGE CIRCUIT MAINTAINS GEN SET BATTERY WHEN CHARGER FUNCTION IS ON AND 120VAC POWER IS AVAILABLE.
THIS PROVIDES REDUNDANCY SHOULD THE GEN SET ALTERNATOR FAIL AND ALSO PROVIDES MAINTENANCE CHARGE WHEN AT THE DOCK.

SEE ALSO:
POWER FLOW DIAGRAMS
EL-04-14 FOR THE CHARGER/INVERTER'S INTERACTIONS WITH THE VESSEL'S OTHER ELECTRICAL SYSTEMS

ANTARES YACHTS ELECTRICAL
INVERTER / CHARGER DIAGRAM
EL-04-19 MAY 12, 2009

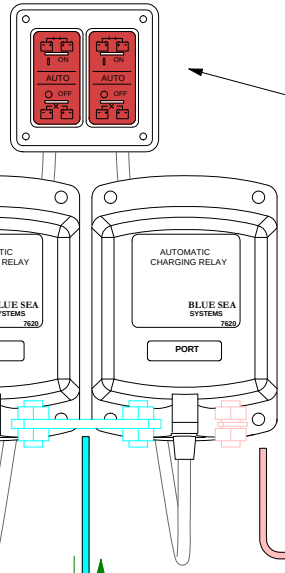
THE CHARGE COMBINER

ALSO DESIGNATED AS AN "ACR",
(AUTOMATIC CHARGE RELAY)
BY SOME MANUFACTURERS

INSTALLATION AND SYSTEM

WARNING;
IF SWITCHES ARE LEFT IN "MANUAL" POSITION,
ALL BATTERIES MAY INADVERTENTLY BE DISCHARGED,
CREATING A "DEAD SHIP" CONDITION.

TO RECOVER, USE GEN SET OR SHORE POWER
TO OPERATE INVERTER / CHARGER

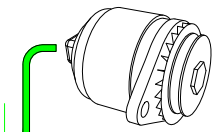


KEEP SWITCHES IN THE AUTO POSITION,
THIS ENABLES CONTROL CIRCUITS TO
MAKE THE SAFE DECISIONS

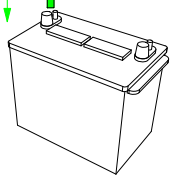
IF THE COMBINERS ARE TURNED OFF OR DISFUNCTONAL;
1) START BATTERIES WITH THEIR RESPECTIVE ALTERNATORS
WILL STAND ALONE.
2) SHIP`S SERVICE BATTERIES WITH THE BATTERY CHARGER
AND SOLAR PANELS WILL STAND ALONE

THE CHARGE COMBINER ASSEMBLY IS
COMPRISED OF TWO BLUE SEA SYSTEMS
7620 ACR'S WITH A COMMON BUS BAR.
THEY CAN FUNCTION INDEPENDENTLY

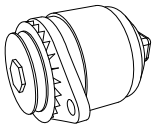
STARBOARD ENGINE DRIVEN
ALTERNATOR PROVIDES
CHARGE DIRECTLY TO ITS
ENGINE SYSTEMS AND
START BATTERY



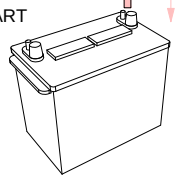
ENGINE START
BATTERY



WHEN COMBINER
IS ENGAGED,
CHARGE MAY FLOW
FROM ANY CHARGE
SOURCE TO ANY
BATTERY

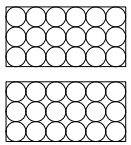


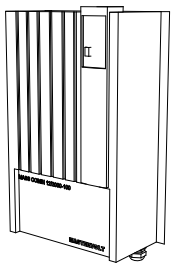
ENGINE START
BATTERY



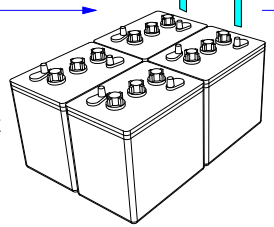
PORT ENGINE DRIVEN
ALTERNATOR PROVIDES
CHARGE DIRECTLY TO ITS
ENGINE SYSTEMS AND
START BATTERY

SOLAR PANELS
PROVIDE LIMITED
CHARGE DIRECTLY
TO SHIP'S SERVICE
BATTERIES





INVERTER / CHARGER
PROVIDES CHARGE DIRECTLY TO
SHIP'S SERVICE BATTERIES



SHIP'S SERVICE
BATTERIES

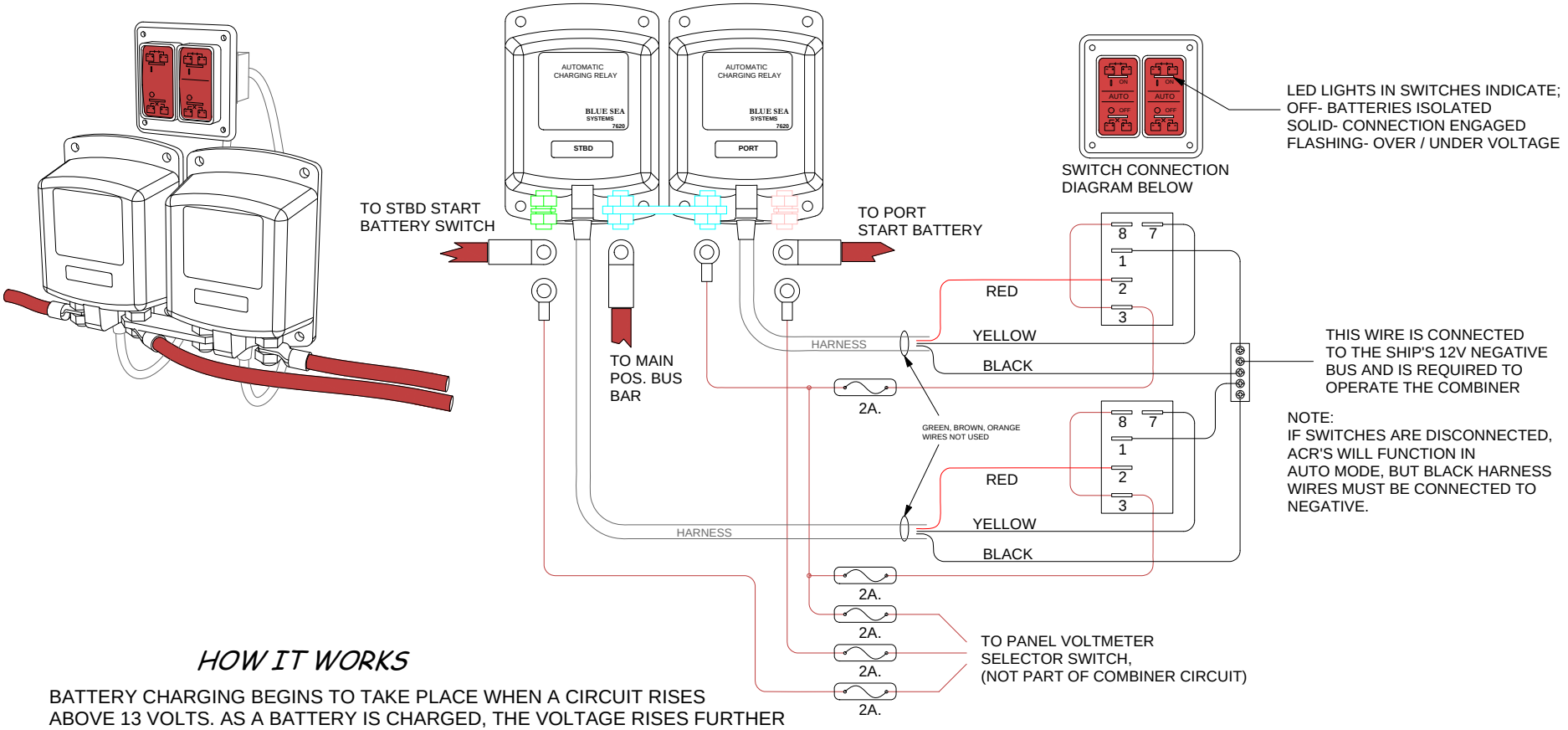
THE COMBINER CONNECTS CHARGING SOURCES TO ANY BATTERY SYSTEM BUT NEVER FORGETS TO DISCONNECT AND PRESERVE BATTERY SYSTEM ISOLATION WHEN BATTERIES ARE BEING DISCHARGED

SEE ALSO:
POWER FLOW DIAGRAMS
EL-04-14 FOR THE COMBINER'S
INTERACTIONS WITH THE
VESSEL'S 12 VOLT DC SYSTEMS

THE CHARGE COMBINER

ALSO DESIGNATED AS AN "ACR",
(AUTOMATIC CHARGE RELAY)
BY SOME MANUFACTURERS

INSTALLATION AND SYSTEM


AUTOMATIC CHARGING RELAY
BLUE SEA SYSTEMS 7620
STBD
PORT
TO STBD START BATTERY SWITCH
TO PORT START BATTERY
TO MAIN POS. BUS BAR
SWITCH CONNECTION DIAGRAM BELOW
LED LIGHTS IN SWITCHES INDICATE;
OFF- BATTERIES ISOLATED
SOLID- CONNECTION ENGAGED
FLASHING- OVER / UNDER VOLTAGE
RED
YELLOW
BLACK
HARNESS
2A.
GREEN, BROWN, ORANGE WIRES NOT USED
THIS WIRE IS CONNECTED TO THE SHIP'S 12V NEGATIVE BUS AND IS REQUIRED TO OPERATE THE COMBINER
NOTE:
IF SWITCHES ARE DISCONNECTED, ACR'S WILL FUNCTION IN AUTO MODE, BUT BLACK HARNESS WIRES MUST BE CONNECTED TO NEGATIVE.
TO PANEL VOLTMETER SELECTOR SWITCH,
(NOT PART OF COMBINER CIRCUIT)

HOW IT WORKS

BATTERY CHARGING BEGINS TO TAKE PLACE WHEN A CIRCUIT RISES ABOVE 13 VOLTS. AS A BATTERY IS CHARGED, THE VOLTAGE RISES FURTHER TO APPROXIMATLEY 14.2 AS FULL CHARGE IS ACHIEVED.
WHEN BATTERIES ARE DISCHARGING THEY QUICKLY FALL BELOW 13V.

WHEN THE VOLTAGE DETECTED AT ONE OF THE LARGE TERMINALS OF AN ACR RISES TO 13.3V INDICATING AN AVAILABLE CHARGE THE INTERNAL PROCESSOR ENERGIZES A MAGNETIC SWITCH, CONNECTING THE BATTERY CIRCUITS TO SHARE THE AVAILABLE CHARGE.

WHEN CHARGE IS NO LONGER AVAILABLE, THE VOLTAGE DROPS BELOW 13V ANDTHE PROCESSOR RELEASES THE MAGNETIC SWITCHES RETURNING THE BATTERIES WITH THEIR RESPECTIVE CIRCUITS TO ISOLATION.

IF A PROCESSOR DETECTS A VOLTAGE BELOW 9.6 OR ABOVE 16.2, IT WILL NOT SUSTAIN A CONNECTION, THEREBY PROTECTING CHARGING EQUIPMENT FROM DAMAGE.

THE PROCESSOR USES THE VOLTAGE READINGS TO DISTINGUISH BETWEEN CHARGE AND DISCHARGE MODES. IN AUTO MODE IT WILL NEVER ALLOW ONE BATTERY OR ITS SYSTEM TO DEPLETE ANOTHER.

SEE ALSO:
POWER FLOW DIAGRAMS
EL-04-14 FOR THE COMBINER'S
INTERACTIONS WITH THE
VESSEL'S 12 VOLT DC SYSTEMS

12 V.D.C. PORT ENG. START BATTERY

START BATTERY SWITCH 300a. CONT. RATED DUAL CIRCUIT

PORT ENGINE
STARTER
12V. ALTERNATOR

HELM SWITCHES — 3a. — ENGINE INSTRUMENTS

SEE HELM PANEL DRWG. EL-04-07

12 V.D.C. STBD. ENG. START BATTERY

START BATTERY SWITCH 300a. CONT. RATED DUAL CIRCUIT

CHARGE COMBINER

STBD. ENGINE
STARTER
12V. ALTERNATOR

HELM SWITCHES — 3a. — ENGINE INSTRUMENTS

12V.D.C. SOLAR ARRAY — SOLAR PANEL REGULATOR — (LOCATED IN HELM CONSOLE)

2a. MONITORING ONLY
2a. MONITORING ONLY
2a.

30a.

SHIP'S SERVICE BATTERY SWITCH 350A. DUAL CIRCUIT

12 V.D.C. SHIP'S SERVICE BATTERIES

NEG.

NOTE; S.S. BATTERY CURRENT FLOW IS MEASURED ON NEGATIVE CONDUCTOR

SHUNT — TO NEG. BUS BAR, NOT SHOWN

D.C. AMPS

BATTERY MONITOR SYSTEM

POSITIVE BUS BAR

80a. — 10a. — WINDLASS REMOTE — WINDLASS RELAY — ANCHOR WINDLASS

80a. — WINCH RELAY — SHEET WINCH

80a. — WINCH RELAY — HALYARD WINCH

30a. — WATERMAKER

MAIN PANEL SUPPLY SUPPLY

300a. — INVERTER SUPPLY / CHARGE

ELECTRICAL COMPARTMENT

12 V.D.C. GEN. START BATTERY — 10a. — 3a. MONITORING ONLY

GEN SET REMOTE CONTROL

FUEL LIFT PUMP — STBD. ENG. RM.

12V.D.C.
120 V.A.C.

INV./CHG. REMOTE PANEL

AUX. CHARGE — 12 VDC IN / CHARGE OUT — CHARGER / INVERTER — INVERTER 120 VAC — 120 VAC OUT — 120 VAC IN — REMOTE PANEL CONTROLS SWITCH

DIAGRAM FOR MASTERVOLT INVERTER / CHARGER MODEL WITH 50a. INPUT CAPACITY. USE "SHORT BREAK" TERMINALS FOR AC OUT

ELECT. COMPT. — 5a.

STBD. ENG. RM. — GEN SET AUXILLARY COOLING WATER PUMP

120V.A.C. GENERATOR — BREAKER INTEGRAL TO GEN SET — 40a.

SHORE #1 — 30a. 120V.A.C. PLUG

LOCATED IN MASTER CABIN LOCKER

SHORE #2 — 30a. 120V.A.C. PLUG

NOTE;
DIAGRAM ILLUSTRATES POSITIVE CONDUCTOR PATHS.
NEGATIVE CONDUCTORS ARE UNSWITCHED AND CONNECTED TO COMMON BUS BAR

V. METER SELECTOR SWITCH — D.C. VOLTS

100a. — D.C. AMPS — D.C. PANEL MAIN

12.V.D.C. PANEL BUS (24 BREAKERS)

15a. PROPANE SYSTEM
15a.
15a. LIGHTING LOADS
15a.
15a.
50a. HELM SUPPLY
15a.
15a.
15a.
15a.
15a.
15a.
15a. TYPICAL FOR GENERAL LOADS
15a.
30a.
15a.
15a.
15a.
30a. BILGE PUMP CIRCUITS

ACTUAL BREAKER VALUES AS REQ. FOR CONDUCTOR OR MOTOR PROTECTION

MAIN DISTRIBUTION PANEL, UPPER 12VDC SECTION

12.V.D.C.
120 V.A.C.

MAIN DISTRIBUTION PANEL, LOWER 120VAC SECTION

GEN — 50a. — 30a. — SHORE #1

SHORE #1 SUPPLY ILLUSTRATED

INTERLOCKED BREAKERS CONNECT "A" WITH EITHER SHORE #1 OR GEN

PARALLEL A & B — 30a. — 30a. — SHORE #2

A & B SUPPLY ILLUSTRATED

INTERLOCKED BREAKERS CONNECT "B" WITH EITHER SHORE #2 OR "A" AS ABOVE

A.C. AMPS

A.C. VOLTS

"A" BUS, SUPPLIED BY SHORE #1 OR GEN.

15a. GENERAL LOADS
15a.
15a.
15a.
20a. AIR COND.
15a.
15a. WATER HEATER

INVERTER BUS CAN BE SUPPLIED BY SHORE #1, GEN SET OR INVERTER

15a. OUTLETS
15a. OUTLETS
15a. OUTLETS
15a. AIR COND.
15a. AIR COND.
15a. WATER HEATER

"B" BUS, SUPPLIED BY SHORE #1, SHORE #2, OR GEN.

5a. — GALLEY CONTROL — COOKTOP IGNITER — CYLINDER SOLENOID

NUMBER AS REQ. TYPICAL — LOCAL CONTROL — LOCAL CONTROL — LIGHTING BUSS BAR TYPICAL

12.V. HELM PANEL BUS, 12 BREAKERS

BREAKER VALUES AS RECOMMENDED FOR MOTOR PROTECTION — BLOWER

30a. — AUTOPILOT — AUTOPILOT PROCESSOR — DISPLAY — AUTOPILOT PUMP

DISPLAY

NAV. INSTRUMENTS TYPICAL, FUSE & VALUES AS RECOMMENDED

DISPLAY — RADAR ANTENNA

NAV AIDS COMPONENTS SUBJECT TO OPTIONS, DATALINK NOT DEPICTED

HELM PANEL

BILGE PUMP SWITCHES

HELM CONTROL — FLOAT SWITCH — BILGE PUMP

HELM CONTROL

HELM CONTROL

5a. — BILGE ALARM — (NEG. CIRCUIT) — FLOAT SWITCHES

HELM CONSOLE

LOAD DIAGRAMS DEPICTED ARE TYPICAL AND WILL VARY WITH VESSEL EQUIPMENT

POWER SOURCES ⟵ GENERAL DRAWING CONFIGURATION ⟶ LOADS

THIS DIAGRAM IS NOT INTENDED TO ACCURATELY INDICATE RELATIVE COMPONENT PLACEMENT OR SEPARATION. CONNECTION DISTANCES ARE DISTORTED

NOTES:

ARRANGEMENT FOR APPLICATION WITH UP TO 6 KW. GEN. SET, (INTEGRAL BATTERY CHARGING),

CHARGE COMBINER ENGAGES ONLY ABOVE 13.2V. (CHARGE PRESENT IN EXCESS OF DISCHARGE), NO NORMAL START OR DISCHARGE FUNCTION ASSOCIATED WITH THIS ITEM

OPTIONAL SYSTEMS SHOWN MAY NOT BE APPLICABLE TO SPECIFIC VESSELS

LOADING OF "A" AND "B" A.C. BUS'S MAY BE BALANCED TO PROVIDE BEST USE OF SHORE POWER & INVERTER RESOURCES FOR SPECIFIC VESSELS

FOR USE WITH TWO 120 VAC 30a. SHORE CORDS

ANTARES 44 ELECTRICAL ONE LINE DIAGRAM EL-04-04

REV. 3, SEPT. 28, 2010
FIRST VESSEL USED 4430

T.C.

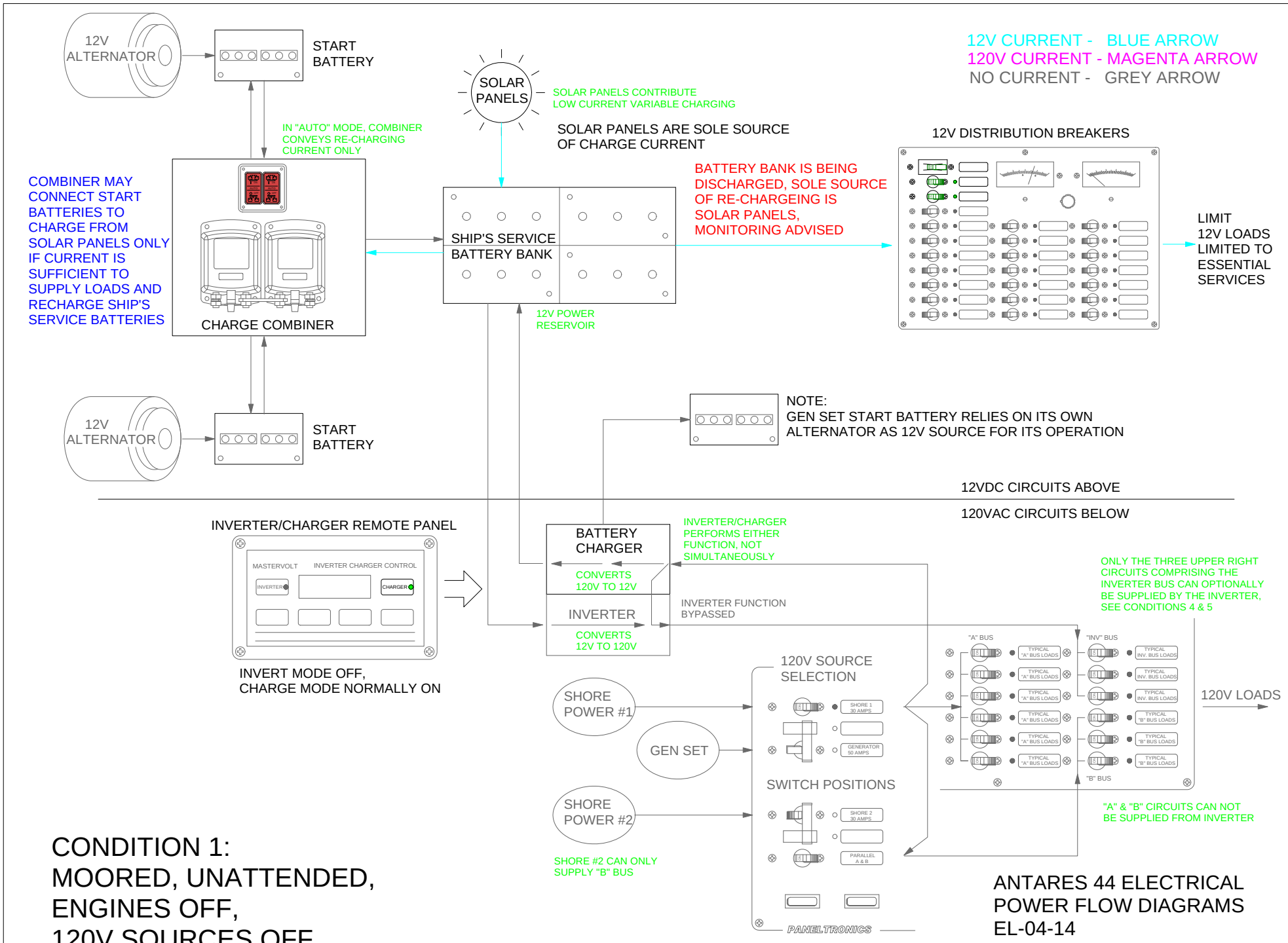
TYPICAL APPLICATION	ENGINES RUNNING	GEN SET RUNNING	SHORE #1 CONNECTED	SHORE #2 CONNECTED	INVERTER FUNCTION	CHARGE COMBINER	CONDITION DIAGRAM #
MOORED	OFF	OFF	OFF	OFF	OFF	AUTO	1
SAILING	OFF	OFF	OFF	OFF	OFF	AUTO	2
MOTORING	ON	OFF	OFF	OFF	OFF	AUTO	3
SAILING	OFF	OFF	OFF	OFF	ON	AUTO	4
MOTORING	ON	OFF	OFF	OFF	ON	AUTO	5
SAILING	OFF	ON	OFF	OFF	OFF	AUTO	6
MOTORING	ON	ON	OFF	OFF	OFF	AUTO	7
AT DOCK	OFF	OFF	ON	OFF	OFF	AUTO	8
AT DOCK	OFF	OFF	ON	ON	OFF	AUTO	9
AT DOCK	ON	OFF	ON	ON	OFF	AUTO	10
AT DOCK	ON	ON	OFF	ON	OFF	AUTO	11
AT SEA	ONE	OFF	OFF	OFF	OFF	AUTO	12
CAUTION SERVICING	ON OR OFF	ON OR OFF	ON OR OFF	ON OR OFF	OFF	OFF	13
EMERGENCY ONLY	ON OR OFF	ON OR OFF	ON OR OFF	ON OR OFF	OFF	MOMENTARY FORCED ON	14

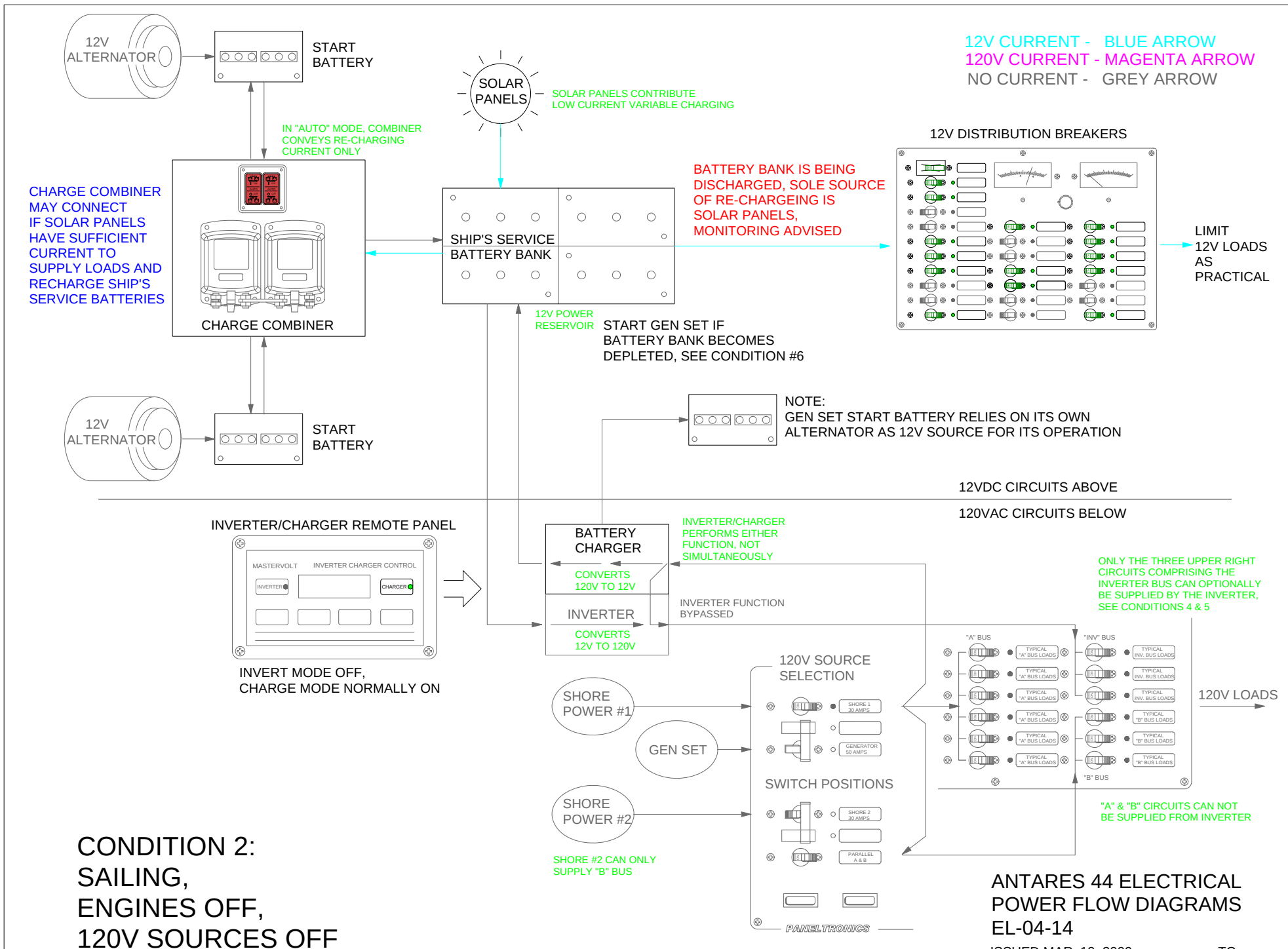
KEY CHART FOR USE WITH 14 CONDITION DIAGRAMS

NOTES:
1) GEN SET 12VDC SYSTEM IS NOT AVAILABLE TO SHIP'S LOADS
2) ENGAGING GEN SET WITH CHARGE COMBINER ON WILL EXPEDITIOUSLY RESOLVE MOST LOW BATTERY PROBLEMS
3) USE WITH ONE LINE ELECTRICAL DIAGRAM EL-04-04 TO IDENTIFY ALL CIRCUIT SWITCHES AND PROTECTION
4) ALTERNATORS ARE ON WHEN ENGINES ARE RUNNING

ANTARES 44 ELECTRICAL POWER FLOW DIAGRAMS
EL-04-14

ISSUED MAR. 19, 2009 TC

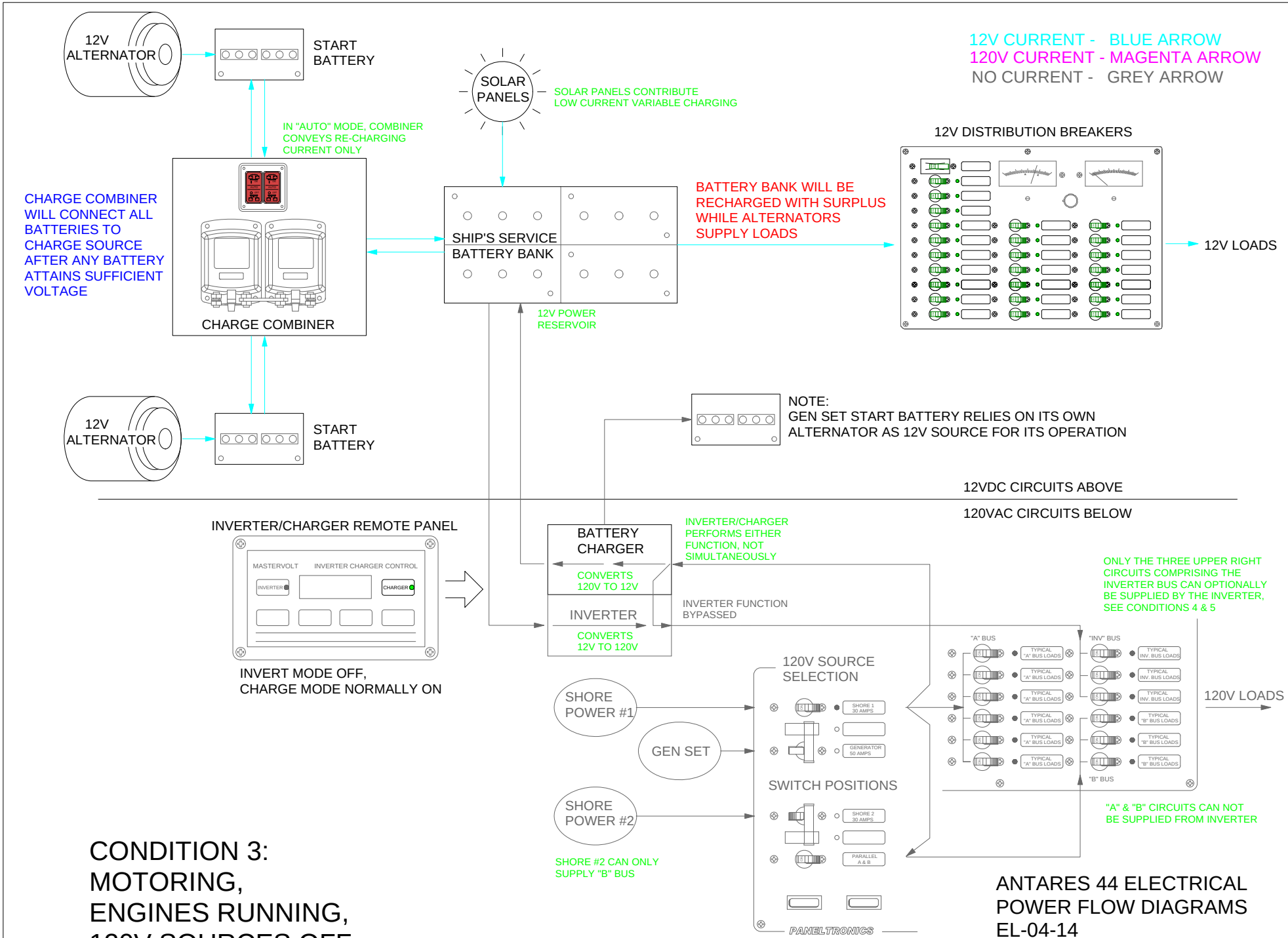

12V CURRENT - BLUE ARROW
120V CURRENT - MAGENTA ARROW
NO CURRENT - GREY ARROW
12V ALTERNATOR
START BATTERY
SOLAR PANELS
SOLAR PANELS CONTRIBUTE LOW CURRENT VARIABLE CHARGING
SOLAR PANELS ARE SOLE SOURCE OF CHARGE CURRENT
IN "AUTO" MODE, COMBINER CONVEYS RE-CHARGING CURRENT ONLY
COMBINER MAY CONNECT START BATTERIES TO CHARGE FROM SOLAR PANELS ONLY IF CURRENT IS SUFFICIENT TO SUPPLY LOADS AND RECHARGE SHIP'S SERVICE BATTERIES
CHARGE COMBINER
SHIP'S SERVICE BATTERY BANK
12V POWER RESERVOIR
BATTERY BANK IS BEING DISCHARGED, SOLE SOURCE OF RE-CHARGEING IS SOLAR PANELS, MONITORING ADVISED
12V DISTRIBUTION BREAKERS
LIMIT 12V LOADS LIMITED TO ESSENTIAL SERVICES
12V ALTERNATOR
START BATTERY
NOTE:
GEN SET START BATTERY RELIES ON ITS OWN ALTERNATOR AS 12V SOURCE FOR ITS OPERATION
12VDC CIRCUITS ABOVE
120VAC CIRCUITS BELOW
INVERTER/CHARGER REMOTE PANEL
MASTERVOLT
INVERTER CHARGER CONTROL
INVERTER
CHARGER
INVERT MODE OFF, CHARGE MODE NORMALLY ON
BATTERY CHARGER
CONVERTS 120V TO 12V
INVERTER
CONVERTS 12V TO 120V
INVERTER/CHARGER PERFORMS EITHER FUNCTION, NOT SIMULTANEOUSLY
INVERTER FUNCTION BYPASSED
ONLY THE THREE UPPER RIGHT CIRCUITS COMPRISING THE INVERTER BUS CAN OPTIONALLY BE SUPPLIED BY THE INVERTER, SEE CONDITIONS 4 & 5
"A" BUS
"INV" BUS
"B" BUS
120V LOADS
"A" & "B" CIRCUITS CAN NOT BE SUPPLIED FROM INVERTER
120V SOURCE SELECTION
SHORE POWER #1
GEN SET
SHORE POWER #2
SHORE #2 CAN ONLY SUPPLY "B" BUS
SWITCH POSITIONS
SHORE 1 30 AMPS
GENERATOR 50 AMPS
SHORE 2 30 AMPS
PARALLEL A & B
PANELTRONICS
CONDITION 1:
MOORED, UNATTENDED,
ENGINES OFF,
120V SOURCES OFF
ANTARES 44 ELECTRICAL POWER FLOW DIAGRAMS
EL-04-14
ISSUED MAR. 19, 2009
TC


12V CURRENT - BLUE ARROW
120V CURRENT - MAGENTA ARROW
NO CURRENT - GREY ARROW
12V ALTERNATOR
START BATTERY
SOLAR PANELS
SOLAR PANELS CONTRIBUTE LOW CURRENT VARIABLE CHARGING
IN "AUTO" MODE, COMBINER CONVEYS RE-CHARGING CURRENT ONLY
CHARGE COMBINER MAY CONNECT IF SOLAR PANELS HAVE SUFFICIENT CURRENT TO SUPPLY LOADS AND RECHARGE SHIP'S SERVICE BATTERIES
CHARGE COMBINER
SHIP'S SERVICE BATTERY BANK
BATTERY BANK IS BEING DISCHARGED, SOLE SOURCE OF RE-CHARGEING IS SOLAR PANELS, MONITORING ADVISED
12V DISTRIBUTION BREAKERS
LIMIT 12V LOADS AS PRACTICAL
12V POWER RESERVOIR
START GEN SET IF BATTERY BANK BECOMES DEPLETED, SEE CONDITION #6
12V ALTERNATOR
START BATTERY
NOTE:
GEN SET START BATTERY RELIES ON ITS OWN ALTERNATOR AS 12V SOURCE FOR ITS OPERATION
12VDC CIRCUITS ABOVE
120VAC CIRCUITS BELOW
INVERTER/CHARGER REMOTE PANEL
MASTERVOLT
INVERTER CHARGER CONTROL
INVERTER
CHARGER
INVERT MODE OFF, CHARGE MODE NORMALLY ON
BATTERY CHARGER
CONVERTS 120V TO 12V
INVERTER
CONVERTS 12V TO 120V
INVERTER/CHARGER PERFORMS EITHER FUNCTION, NOT SIMULTANEOUSLY
INVERTER FUNCTION BYPASSED
ONLY THE THREE UPPER RIGHT CIRCUITS COMPRISING THE INVERTER BUS CAN OPTIONALLY BE SUPPLIED BY THE INVERTER, SEE CONDITIONS 4 & 5
120V SOURCE SELECTION
SHORE POWER #1
GEN SET
SHORE POWER #2
SHORE 1 30 AMPS
GENERATOR 50 AMPS
SHORE 2 30 AMPS
PARALLEL A & B
SWITCH POSITIONS
SHORE #2 CAN ONLY SUPPLY "B" BUS
"A" BUS
"INV" BUS
"B" BUS
TYPICAL "A" BUS LOADS
TYPICAL INV. BUS LOADS
TYPICAL "B" BUS LOADS
120V LOADS
"A" & "B" CIRCUITS CAN NOT BE SUPPLIED FROM INVERTER
PANELTRONICS

CONDITION 2:
SAILING,
ENGINES OFF,
120V SOURCES OFF

ANTARES 44 ELECTRICAL POWER FLOW DIAGRAMS
EL-04-14

ISSUED MAR. 19, 2009 TC


12V CURRENT - BLUE ARROW
120V CURRENT - MAGENTA ARROW
NO CURRENT - GREY ARROW
12V ALTERNATOR
START BATTERY
SOLAR PANELS
SOLAR PANELS CONTRIBUTE LOW CURRENT VARIABLE CHARGING
IN "AUTO" MODE, COMBINER CONVEYS RE-CHARGING CURRENT ONLY
CHARGE COMBINER WILL CONNECT ALL BATTERIES TO CHARGE SOURCE AFTER ANY BATTERY ATTAINS SUFFICIENT VOLTAGE
CHARGE COMBINER
SHIP'S SERVICE BATTERY BANK
12V POWER RESERVOIR
BATTERY BANK WILL BE RECHARGED WITH SURPLUS WHILE ALTERNATORS SUPPLY LOADS
12V DISTRIBUTION BREAKERS
12V LOADS
12V ALTERNATOR
START BATTERY
NOTE:
GEN SET START BATTERY RELIES ON ITS OWN ALTERNATOR AS 12V SOURCE FOR ITS OPERATION
12VDC CIRCUITS ABOVE
120VAC CIRCUITS BELOW
INVERTER/CHARGER REMOTE PANEL
MASTERVOLT
INVERTER CHARGER CONTROL
INVERT MODE OFF,
CHARGE MODE NORMALLY ON
BATTERY CHARGER
CONVERTS 120V TO 12V
INVERTER
CONVERTS 12V TO 120V
INVERTER/CHARGER PERFORMS EITHER FUNCTION, NOT SIMULTANEOUSLY
INVERTER FUNCTION BYPASSED
ONLY THE THREE UPPER RIGHT CIRCUITS COMPRISING THE INVERTER BUS CAN OPTIONALLY BE SUPPLIED BY THE INVERTER, SEE CONDITIONS 4 & 5
120V SOURCE SELECTION
SHORE POWER #1
GEN SET
SHORE POWER #2
SHORE #2 CAN ONLY SUPPLY "B" BUS
SWITCH POSITIONS
"A" BUS
"INV" BUS
"B" BUS
120V LOADS
"A" & "B" CIRCUITS CAN NOT BE SUPPLIED FROM INVERTER
PANELTRONICS
CONDITION 3:
MOTORING,
ENGINES RUNNING,
120V SOURCES OFF
ANTARES 44 ELECTRICAL POWER FLOW DIAGRAMS
EL-04-14
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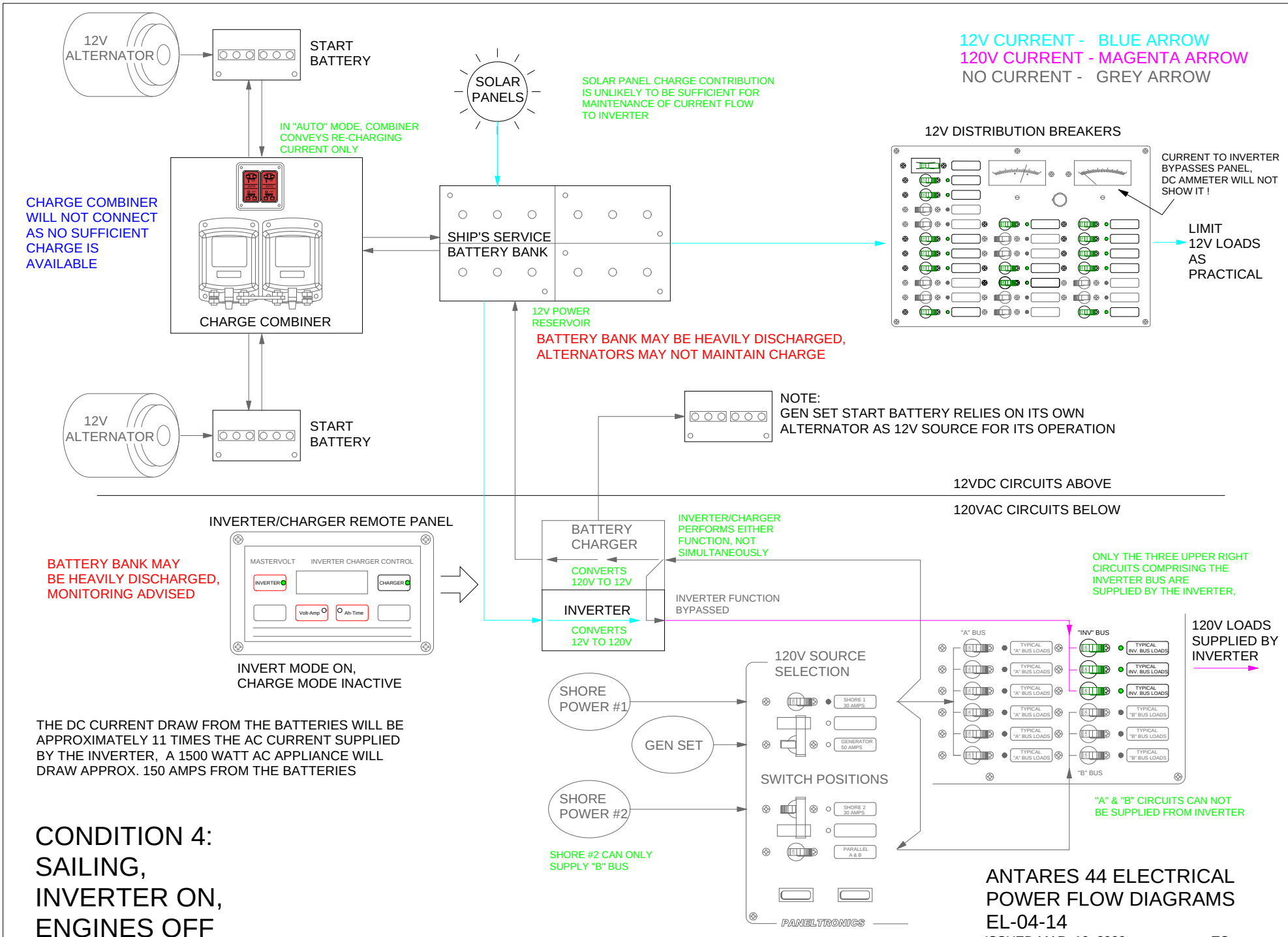
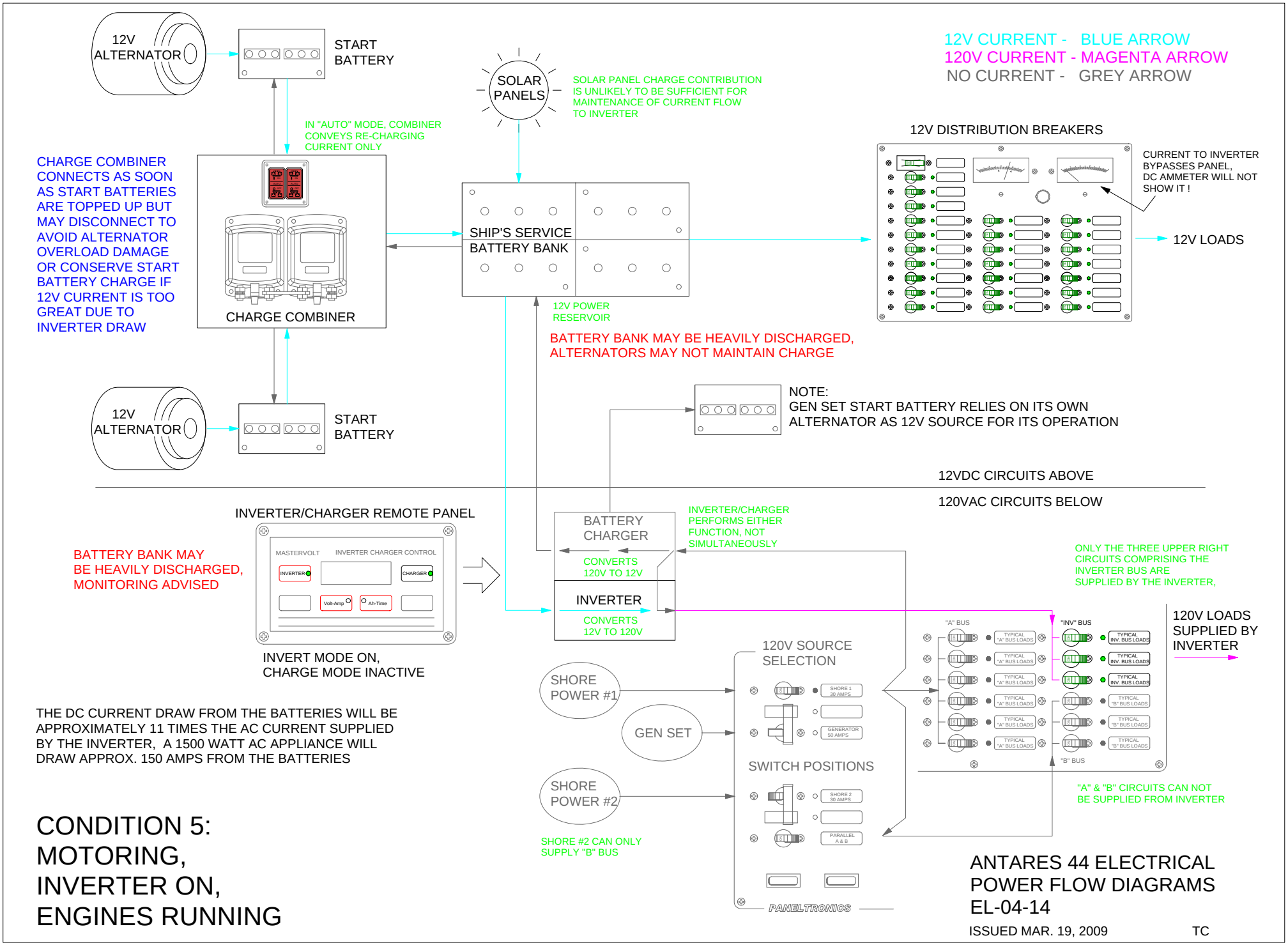

12V CURRENT - BLUE ARROW
120V CURRENT - MAGENTA ARROW
NO CURRENT - GREY ARROW
12V ALTERNATOR
START BATTERY
SOLAR PANELS
SOLAR PANEL CHARGE CONTRIBUTION IS UNLIKELY TO BE SUFFICIENT FOR MAINTENANCE OF CURRENT FLOW TO INVERTER
IN "AUTO" MODE, COMBINER CONVEYS RE-CHARGING CURRENT ONLY
CHARGE COMBINER WILL NOT CONNECT AS NO SUFFICIENT CHARGE IS AVAILABLE
CHARGE COMBINER
SHIP'S SERVICE BATTERY BANK
12V POWER RESERVOIR
BATTERY BANK MAY BE HEAVILY DISCHARGED, ALTERNATORS MAY NOT MAINTAIN CHARGE
12V DISTRIBUTION BREAKERS
CURRENT TO INVERTER BYPASSES PANEL, DC AMMETER WILL NOT SHOW IT !
LIMIT 12V LOADS AS PRACTICAL
12V ALTERNATOR
START BATTERY
NOTE:
GEN SET START BATTERY RELIES ON ITS OWN ALTERNATOR AS 12V SOURCE FOR ITS OPERATION
12VDC CIRCUITS ABOVE
120VAC CIRCUITS BELOW
INVERTER/CHARGER REMOTE PANEL
MASTERVOLT
INVERTER CHARGER CONTROL
INVERTER
CHARGER
Volt-Amp
Ah-Time
BATTERY BANK MAY BE HEAVILY DISCHARGED, MONITORING ADVISED
INVERT MODE ON, CHARGE MODE INACTIVE
BATTERY CHARGER
CONVERTS 120V TO 12V
INVERTER
CONVERTS 12V TO 120V
INVERTER/CHARGER PERFORMS EITHER FUNCTION, NOT SIMULTANEOUSLY
INVERTER FUNCTION BYPASSED
ONLY THE THREE UPPER RIGHT CIRCUITS COMPRISING THE INVERTER BUS ARE SUPPLIED BY THE INVERTER,
120V LOADS SUPPLIED BY INVERTER
"A" BUS
"INV" BUS
"B" BUS
TYPICAL "A" BUS LOADS
TYPICAL INV. BUS LOADS
TYPICAL "B" BUS LOADS
120V SOURCE SELECTION
SHORE POWER #1
GEN SET
SHORE POWER #2
SHORE 1 30 AMPS
GENERATOR 50 AMPS
SHORE 2 30 AMPS
PARALLEL A & B
SWITCH POSITIONS
SHORE #2 CAN ONLY SUPPLY "B" BUS
"A" & "B" CIRCUITS CAN NOT BE SUPPLIED FROM INVERTER
PANELTRONICS
THE DC CURRENT DRAW FROM THE BATTERIES WILL BE APPROXIMATELY 11 TIMES THE AC CURRENT SUPPLIED BY THE INVERTER, A 1500 WATT AC APPLIANCE WILL DRAW APPROX. 150 AMPS FROM THE BATTERIES
CONDITION 4:
SAILING,
INVERTER ON,
ENGINES OFF
ANTARES 44 ELECTRICAL POWER FLOW DIAGRAMS
EL-04-14
ISSUED MAR. 19, 2009
TC


12V CURRENT - BLUE ARROW
120V CURRENT - MAGENTA ARROW
NO CURRENT - GREY ARROW
12V ALTERNATOR
START BATTERY
SOLAR PANELS
SOLAR PANEL CHARGE CONTRIBUTION IS UNLIKELY TO BE SUFFICIENT FOR MAINTENANCE OF CURRENT FLOW TO INVERTER
IN "AUTO" MODE, COMBINER CONVEYS RE-CHARGING CURRENT ONLY
CHARGE COMBINER CONNECTS AS SOON AS START BATTERIES ARE TOPPED UP BUT MAY DISCONNECT TO AVOID ALTERNATOR OVERLOAD DAMAGE OR CONSERVE START BATTERY CHARGE IF 12V CURRENT IS TOO GREAT DUE TO INVERTER DRAW
CHARGE COMBINER
SHIP'S SERVICE BATTERY BANK
12V POWER RESERVOIR
12V DISTRIBUTION BREAKERS
CURRENT TO INVERTER BYPASSES PANEL, DC AMMETER WILL NOT SHOW IT !
12V LOADS
BATTERY BANK MAY BE HEAVILY DISCHARGED, ALTERNATORS MAY NOT MAINTAIN CHARGE
12V ALTERNATOR
START BATTERY
NOTE:
GEN SET START BATTERY RELIES ON ITS OWN ALTERNATOR AS 12V SOURCE FOR ITS OPERATION
12VDC CIRCUITS ABOVE
120VAC CIRCUITS BELOW
INVERTER/CHARGER REMOTE PANEL
MASTERVOLT
INVERTER CHARGER CONTROL
INVERTER
CHARGER
Volt-Amp
Ah-Time
BATTERY BANK MAY BE HEAVILY DISCHARGED, MONITORING ADVISED
INVERT MODE ON, CHARGE MODE INACTIVE
BATTERY CHARGER
CONVERTS 120V TO 12V
INVERTER
CONVERTS 12V TO 120V
INVERTER/CHARGER PERFORMS EITHER FUNCTION, NOT SIMULTANEOUSLY
ONLY THE THREE UPPER RIGHT CIRCUITS COMPRISING THE INVERTER BUS ARE SUPPLIED BY THE INVERTER,
120V LOADS SUPPLIED BY INVERTER
"A" BUS
"INV" BUS
"B" BUS
TYPICAL "A" BUS LOADS
TYPICAL INV. BUS LOADS
TYPICAL "B" BUS LOADS
"A" & "B" CIRCUITS CAN NOT BE SUPPLIED FROM INVERTER
120V SOURCE SELECTION
SHORE POWER #1
GEN SET
SHORE POWER #2
SHORE 1 30 AMPS
GENERATOR 50 AMPS
SHORE 2 30 AMPS
PARALLEL A & B
SWITCH POSITIONS
SHORE #2 CAN ONLY SUPPLY "B" BUS
PANELTRONICS
THE DC CURRENT DRAW FROM THE BATTERIES WILL BE APPROXIMATELY 11 TIMES THE AC CURRENT SUPPLIED BY THE INVERTER, A 1500 WATT AC APPLIANCE WILL DRAW APPROX. 150 AMPS FROM THE BATTERIES
CONDITION 5:
MOTORING,
INVERTER ON,
ENGINES RUNNING
ANTARES 44 ELECTRICAL POWER FLOW DIAGRAMS
EL-04-14
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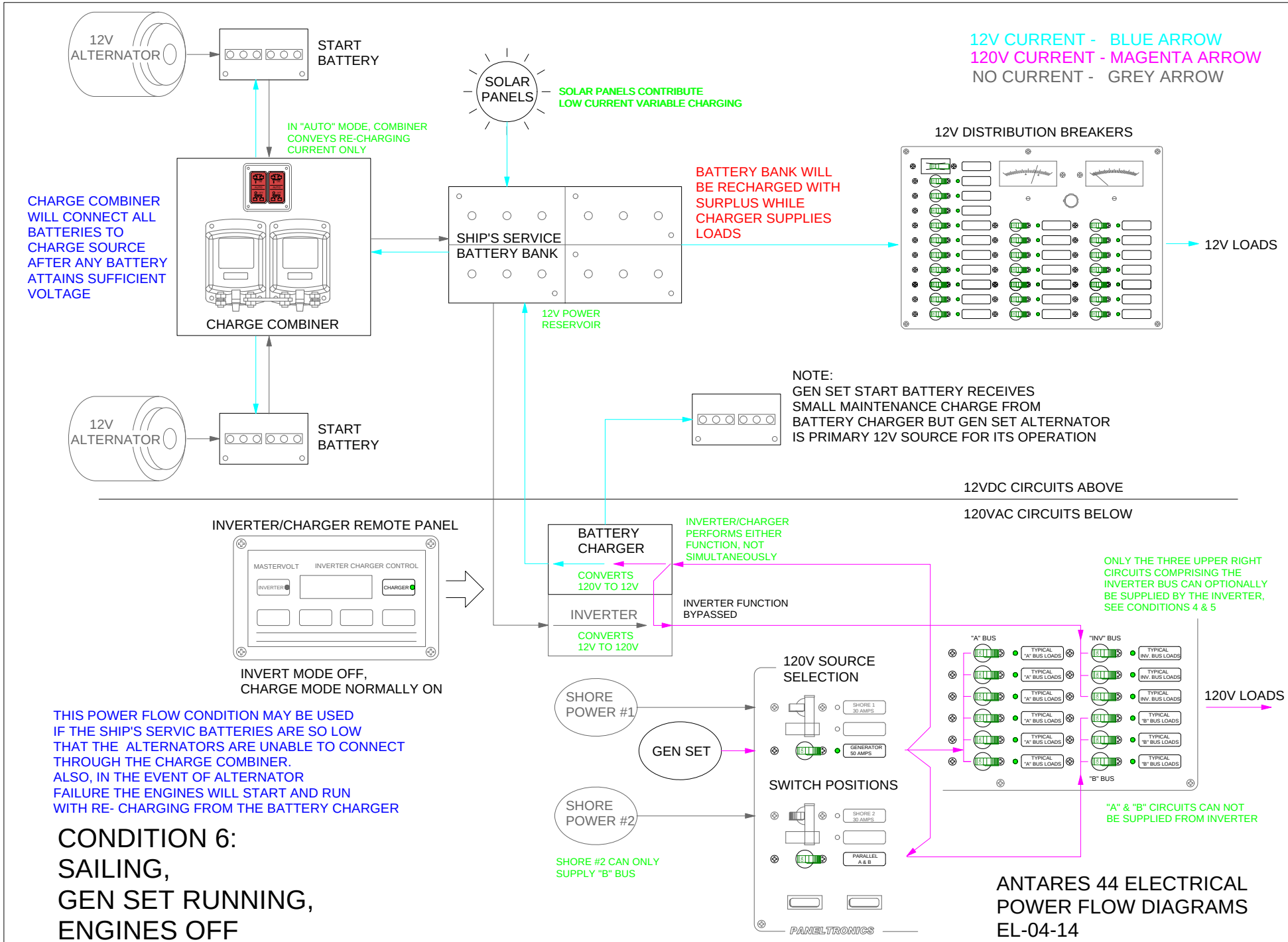
12V CURRENT - BLUE ARROW
120V CURRENT - MAGENTA ARROW
NO CURRENT - GREY ARROW
12V ALTERNATOR
START BATTERY
SOLAR PANELS
SOLAR PANELS CONTRIBUTE LOW CURRENT VARIABLE CHARGING
IN "AUTO" MODE, COMBINER CONVEYS RE-CHARGING CURRENT ONLY
CHARGE COMBINER WILL CONNECT ALL BATTERIES TO CHARGE SOURCE AFTER ANY BATTERY ATTAINS SUFFICIENT VOLTAGE
CHARGE COMBINER
SHIP'S SERVICE BATTERY BANK
12V POWER RESERVOIR
BATTERY BANK WILL BE RECHARGED WITH SURPLUS WHILE CHARGER SUPPLIES LOADS
12V DISTRIBUTION BREAKERS
12V LOADS
12V ALTERNATOR
START BATTERY
NOTE:
GEN SET START BATTERY RECEIVES SMALL MAINTENANCE CHARGE FROM BATTERY CHARGER BUT GEN SET ALTERNATOR IS PRIMARY 12V SOURCE FOR ITS OPERATION
12VDC CIRCUITS ABOVE
120VAC CIRCUITS BELOW
INVERTER/CHARGER REMOTE PANEL
MASTERVOLT
INVERTER CHARGER CONTROL
INVERTER
CHARGER
INVERT MODE OFF, CHARGE MODE NORMALLY ON
BATTERY CHARGER
CONVERTS 120V TO 12V
INVERTER
CONVERTS 12V TO 120V
INVERTER/CHARGER PERFORMS EITHER FUNCTION, NOT SIMULTANEOUSLY
INVERTER FUNCTION BYPASSED
ONLY THE THREE UPPER RIGHT CIRCUITS COMPRISING THE INVERTER BUS CAN OPTIONALLY BE SUPPLIED BY THE INVERTER, SEE CONDITIONS 4 & 5
"A" BUS
"INV" BUS
"B" BUS
TYPICAL "A" BUS LOADS
TYPICAL INV. BUS LOADS
TYPICAL "B" BUS LOADS
120V LOADS
"A" & "B" CIRCUITS CAN NOT BE SUPPLIED FROM INVERTER
120V SOURCE SELECTION
SHORE POWER #1
GEN SET
SHORE POWER #2
SHORE 1 30 AMPS
GENERATOR 50 AMPS
SHORE 2 30 AMPS
PARALLEL A & B
SWITCH POSITIONS
SHORE #2 CAN ONLY SUPPLY "B" BUS
PANELTRONICS
THIS POWER FLOW CONDITION MAY BE USED IF THE SHIP'S SERVIC BATTERIES ARE SO LOW THAT THE ALTERNATORS ARE UNABLE TO CONNECT THROUGH THE CHARGE COMBINER. ALSO, IN THE EVENT OF ALTERNATOR FAILURE THE ENGINES WILL START AND RUN WITH RE- CHARGING FROM THE BATTERY CHARGER
CONDITION 6:
SAILING,
GEN SET RUNNING,
ENGINES OFF
ANTARES 44 ELECTRICAL POWER FLOW DIAGRAMS
EL-04-14
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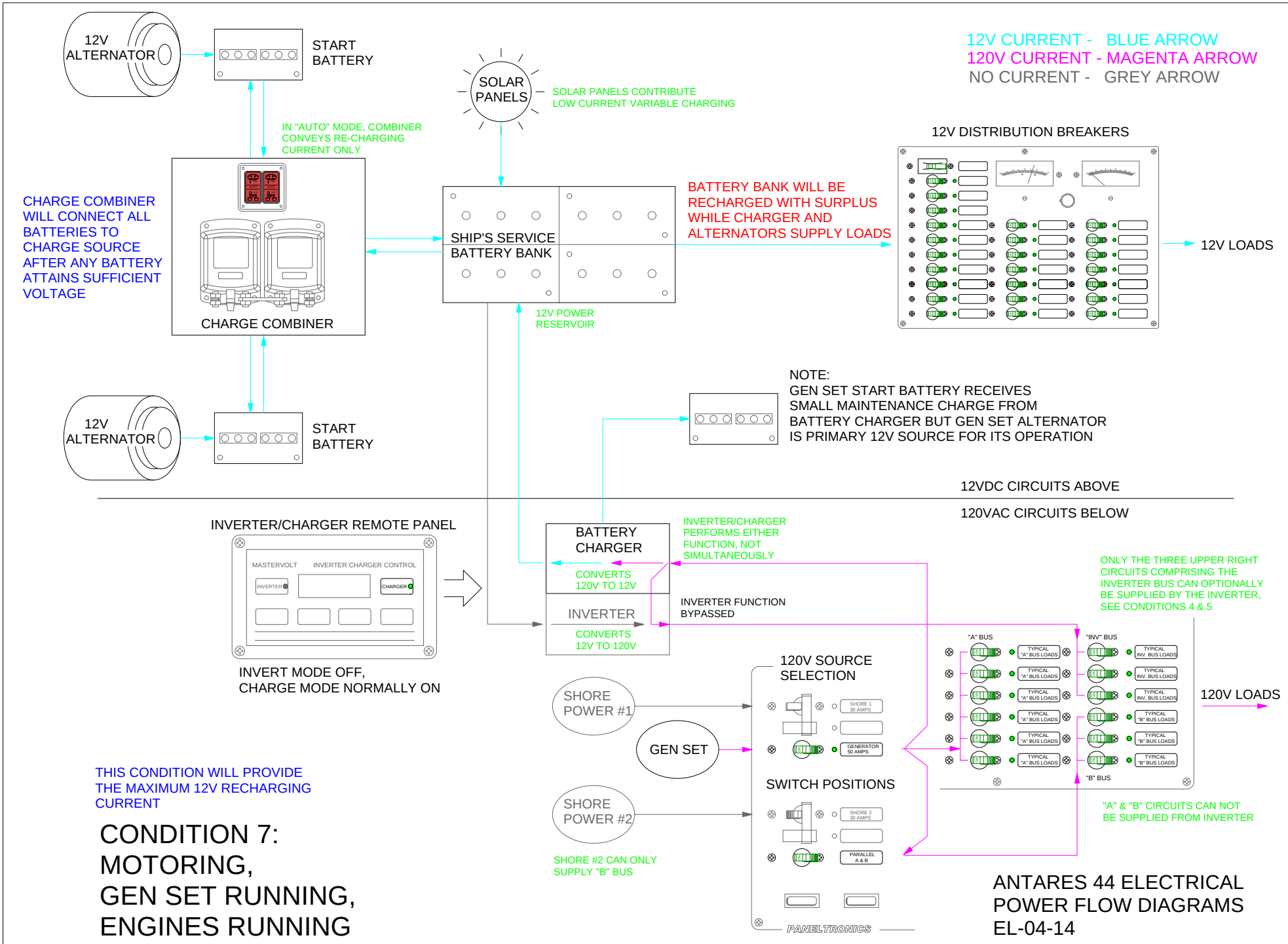
12V CURRENT - BLUE ARROW
120V CURRENT - MAGENTA ARROW
NO CURRENT - GREY ARROW
12V ALTERNATOR
START BATTERY
SOLAR PANELS
SOLAR PANELS CONTRIBUTE LOW CURRENT VARIABLE CHARGING
IN "AUTO" MODE, COMBINER CONVEYS RE-CHARGING CURRENT ONLY
12V DISTRIBUTION BREAKERS
CHARGE COMBINER WILL CONNECT ALL BATTERIES TO CHARGE SOURCE AFTER ANY BATTERY ATTAINS SUFFICIENT VOLTAGE
CHARGE COMBINER
SHIP'S SERVICE BATTERY BANK
BATTERY BANK WILL BE RECHARGED WITH SURPLUS WHILE CHARGER AND ALTERNATORS SUPPLY LOADS
12V LOADS
12V POWER RESERVOIR
12V ALTERNATOR
START BATTERY
NOTE:
GEN SET START BATTERY RECEIVES SMALL MAINTENANCE CHARGE FROM BATTERY CHARGER BUT GEN SET ALTERNATOR IS PRIMARY 12V SOURCE FOR ITS OPERATION
12VDC CIRCUITS ABOVE
120VAC CIRCUITS BELOW
INVERTER/CHARGER REMOTE PANEL
MASTERVOLT
INVERTER CHARGER CONTROL
INVERTER
CHARGER
INVERT MODE OFF,
CHARGE MODE NORMALLY ON
BATTERY CHARGER
CONVERTS 120V TO 12V
INVERTER
CONVERTS 12V TO 120V
INVERTER/CHARGER PERFORMS EITHER FUNCTION, NOT SIMULTANEOUSLY
INVERTER FUNCTION BYPASSED
ONLY THE THREE UPPER RIGHT CIRCUITS COMPRISING THE INVERTER BUS CAN OPTIONALLY BE SUPPLIED BY THE INVERTER, SEE CONDITIONS 4 & 5
"A" BUS
"INV" BUS
"B" BUS
120V LOADS
"A" & "B" CIRCUITS CAN NOT BE SUPPLIED FROM INVERTER
120V SOURCE SELECTION
SHORE POWER #1
GEN SET
SHORE POWER #2
SHORE 1 30 AMPS
GENERATOR 50 AMPS
SHORE 2 30 AMPS
PARALLEL A & B
SWITCH POSITIONS
SHORE #2 CAN ONLY SUPPLY "B" BUS
PANELTRONICS
THIS CONDITION WILL PROVIDE THE MAXIMUM 12V RECHARGING CURRENT
CONDITION 7:
MOTORING,
GEN SET RUNNING,
ENGINES RUNNING
ANTARES 44 ELECTRICAL POWER FLOW DIAGRAMS
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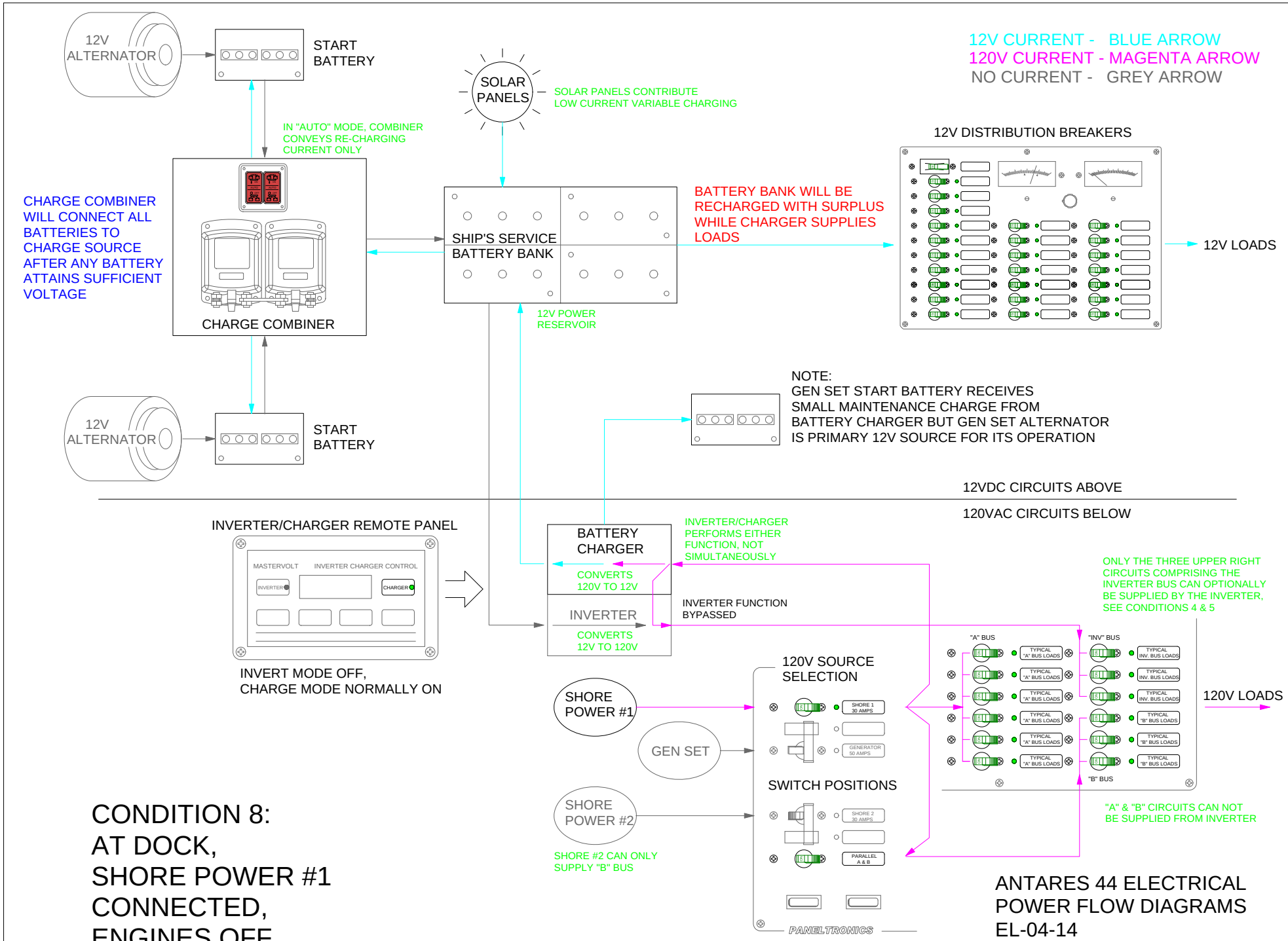
12V CURRENT - BLUE ARROW
120V CURRENT - MAGENTA ARROW
NO CURRENT - GREY ARROW
12V ALTERNATOR
START BATTERY
SOLAR PANELS
SOLAR PANELS CONTRIBUTE LOW CURRENT VARIABLE CHARGING
IN "AUTO" MODE, COMBINER CONVEYS RE-CHARGING CURRENT ONLY
CHARGE COMBINER WILL CONNECT ALL BATTERIES TO CHARGE SOURCE AFTER ANY BATTERY ATTAINS SUFFICIENT VOLTAGE
CHARGE COMBINER
SHIP'S SERVICE BATTERY BANK
BATTERY BANK WILL BE RECHARGED WITH SURPLUS WHILE CHARGER SUPPLIES LOADS
12V DISTRIBUTION BREAKERS
12V LOADS
12V POWER RESERVOIR
12V ALTERNATOR
START BATTERY
NOTE:
GEN SET START BATTERY RECEIVES SMALL MAINTENANCE CHARGE FROM BATTERY CHARGER BUT GEN SET ALTERNATOR IS PRIMARY 12V SOURCE FOR ITS OPERATION
12VDC CIRCUITS ABOVE
120VAC CIRCUITS BELOW
INVERTER/CHARGER REMOTE PANEL
MASTERVOLT
INVERTER CHARGER CONTROL
INVERTER
CHARGER
INVERT MODE OFF, CHARGE MODE NORMALLY ON
BATTERY CHARGER
CONVERTS 120V TO 12V
INVERTER
CONVERTS 12V TO 120V
INVERTER/CHARGER PERFORMS EITHER FUNCTION, NOT SIMULTANEOUSLY
INVERTER FUNCTION BYPASSED
ONLY THE THREE UPPER RIGHT CIRCUITS COMPRISING THE INVERTER BUS CAN OPTIONALLY BE SUPPLIED BY THE INVERTER, SEE CONDITIONS 4 & 5
"A" BUS
"INV" BUS
"B" BUS
TYPICAL "A" BUS LOADS
TYPICAL INV. BUS LOADS
TYPICAL "B" BUS LOADS
120V LOADS
120V SOURCE SELECTION
SHORE POWER #1
GEN SET
SHORE POWER #2
SHORE 1 30 AMPS
GENERATOR 50 AMPS
SHORE 2 30 AMPS
PARALLEL A & B
SWITCH POSITIONS
SHORE #2 CAN ONLY SUPPLY "B" BUS
"A" & "B" CIRCUITS CAN NOT BE SUPPLIED FROM INVERTER
PANELTRONICS
CONDITION 8:
AT DOCK,
SHORE POWER #1
CONNECTED,
ENGINES OFF
ANTARES 44 ELECTRICAL POWER FLOW DIAGRAMS
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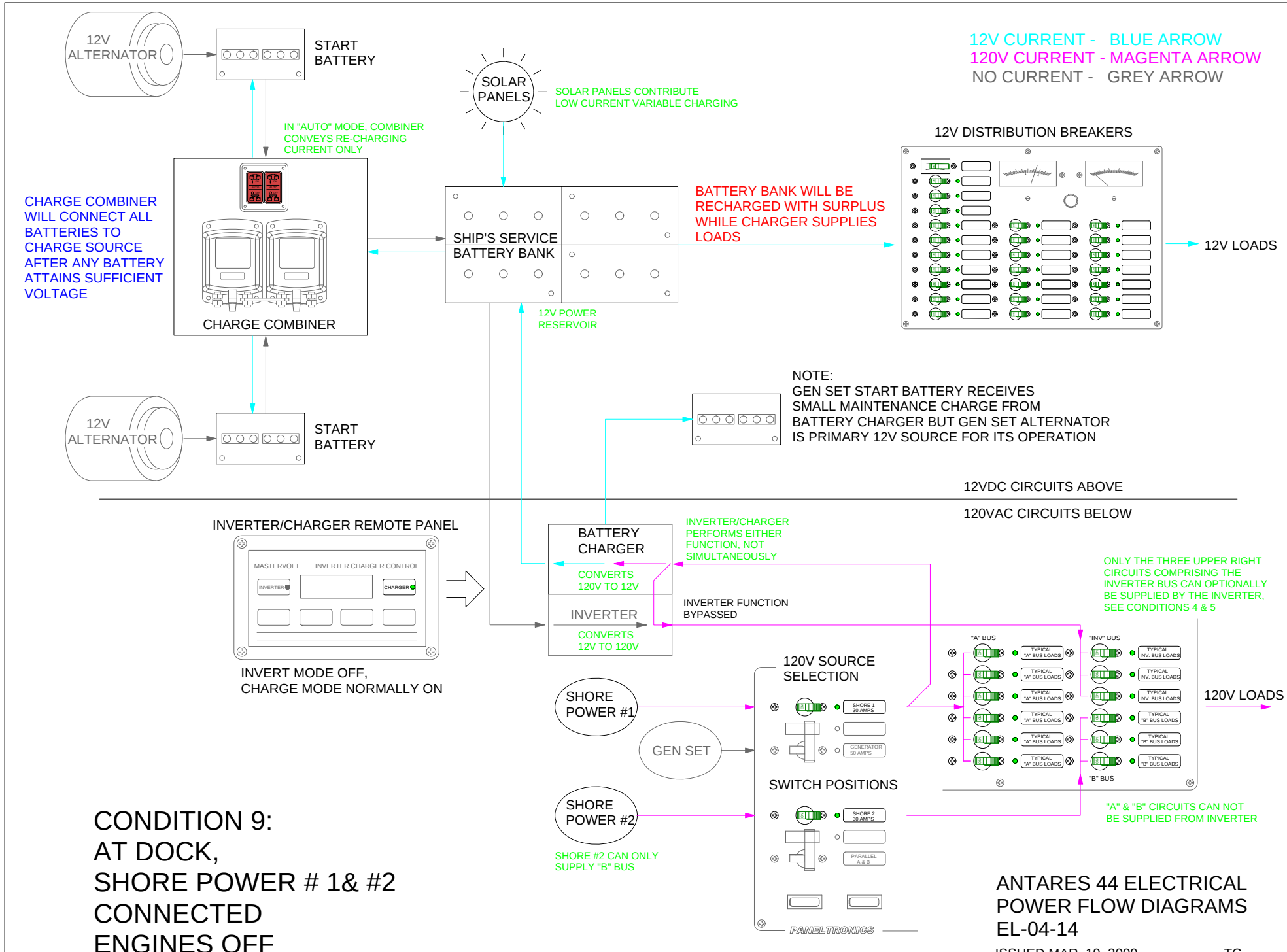
12V CURRENT - BLUE ARROW
120V CURRENT - MAGENTA ARROW
NO CURRENT - GREY ARROW
12V ALTERNATOR
START BATTERY
SOLAR PANELS
SOLAR PANELS CONTRIBUTE LOW CURRENT VARIABLE CHARGING
IN "AUTO" MODE, COMBINER CONVEYS RE-CHARGING CURRENT ONLY
CHARGE COMBINER WILL CONNECT ALL BATTERIES TO CHARGE SOURCE AFTER ANY BATTERY ATTAINS SUFFICIENT VOLTAGE
CHARGE COMBINER
SHIP'S SERVICE BATTERY BANK
12V POWER RESERVOIR
BATTERY BANK WILL BE RECHARGED WITH SURPLUS WHILE CHARGER SUPPLIES LOADS
12V DISTRIBUTION BREAKERS
12V LOADS
12V ALTERNATOR
START BATTERY
NOTE:
GEN SET START BATTERY RECEIVES SMALL MAINTENANCE CHARGE FROM BATTERY CHARGER BUT GEN SET ALTERNATOR IS PRIMARY 12V SOURCE FOR ITS OPERATION
12VDC CIRCUITS ABOVE
120VAC CIRCUITS BELOW
INVERTER/CHARGER REMOTE PANEL
MASTERVOLT
INVERTER CHARGER CONTROL
INVERTER
CHARGER
INVERT MODE OFF,
CHARGE MODE NORMALLY ON
BATTERY CHARGER
CONVERTS 120V TO 12V
INVERTER
CONVERTS 12V TO 120V
INVERTER/CHARGER PERFORMS EITHER FUNCTION, NOT SIMULTANEOUSLY
INVERTER FUNCTION BYPASSED
ONLY THE THREE UPPER RIGHT CIRCUITS COMPRISING THE INVERTER BUS CAN OPTIONALLY BE SUPPLIED BY THE INVERTER, SEE CONDITIONS 4 & 5
"A" BUS
"INV" BUS
"B" BUS
TYPICAL "A" BUS LOADS
TYPICAL INV. BUS LOADS
TYPICAL "B" BUS LOADS
120V LOADS
120V SOURCE SELECTION
SHORE POWER #1
GEN SET
SHORE POWER #2
SHORE 1 30 AMPS
GENERATOR 50 AMPS
SHORE 2 30 AMPS
PARALLEL A & B
SWITCH POSITIONS
SHORE #2 CAN ONLY SUPPLY "B" BUS
"A" & "B" CIRCUITS CAN NOT BE SUPPLIED FROM INVERTER
PANELTRONICS
CONDITION 9:
AT DOCK,
SHORE POWER # 1& #2
CONNECTED
ENGINES OFF
ANTARES 44 ELECTRICAL POWER FLOW DIAGRAMS
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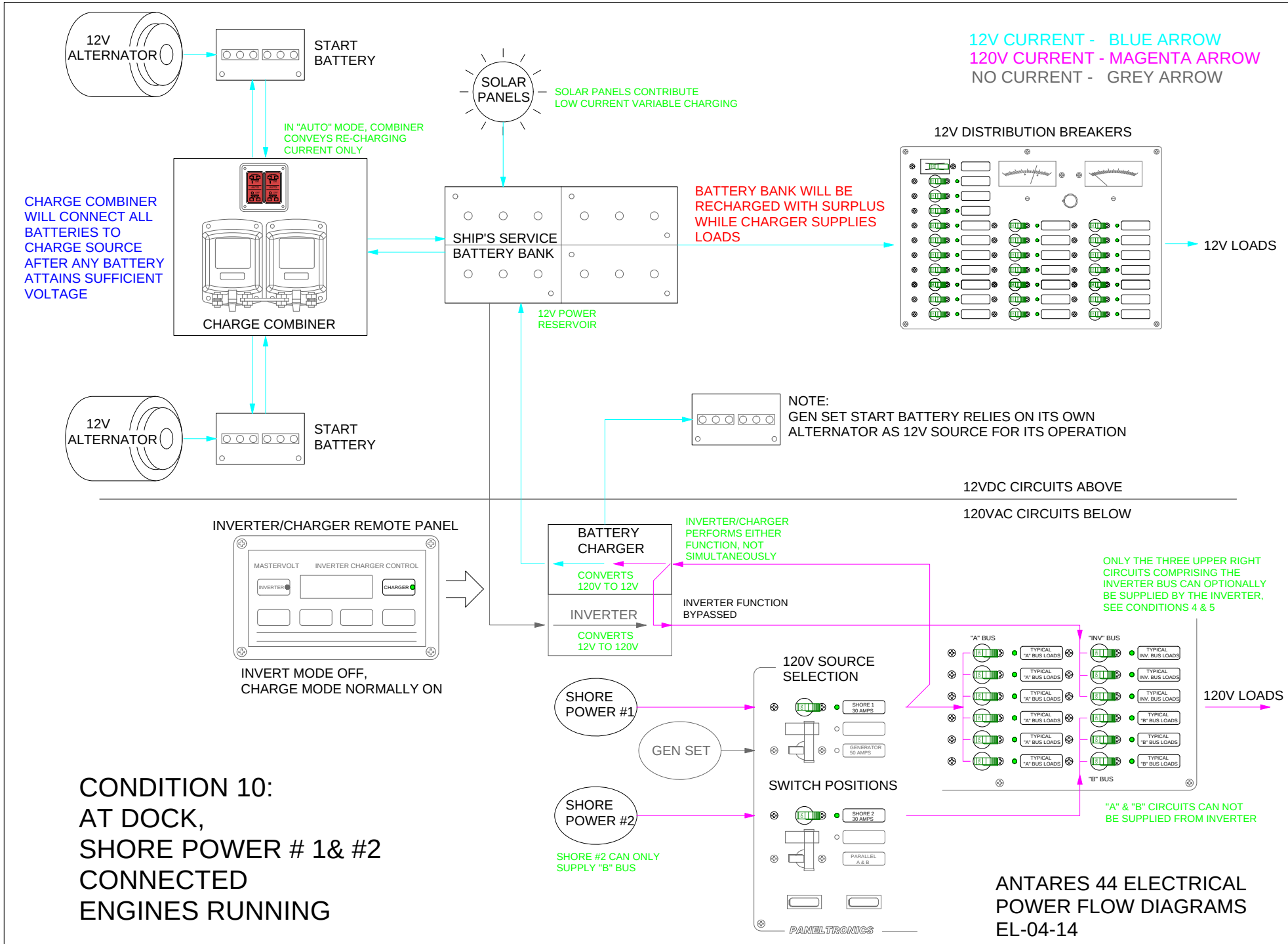
12V CURRENT - BLUE ARROW
120V CURRENT - MAGENTA ARROW
NO CURRENT - GREY ARROW
12V ALTERNATOR
START BATTERY
SOLAR PANELS
SOLAR PANELS CONTRIBUTE LOW CURRENT VARIABLE CHARGING
IN "AUTO" MODE, COMBINER CONVEYS RE-CHARGING CURRENT ONLY
CHARGE COMBINER WILL CONNECT ALL BATTERIES TO CHARGE SOURCE AFTER ANY BATTERY ATTAINS SUFFICIENT VOLTAGE
CHARGE COMBINER
SHIP'S SERVICE BATTERY BANK
12V POWER RESERVOIR
BATTERY BANK WILL BE RECHARGED WITH SURPLUS WHILE CHARGER SUPPLIES LOADS
12V DISTRIBUTION BREAKERS
12V LOADS
12V ALTERNATOR
START BATTERY
NOTE:
GEN SET START BATTERY RELIES ON ITS OWN ALTERNATOR AS 12V SOURCE FOR ITS OPERATION
12VDC CIRCUITS ABOVE
120VAC CIRCUITS BELOW
INVERTER/CHARGER REMOTE PANEL
MASTERVOLT
INVERTER CHARGER CONTROL
INVERTER
CHARGER
INVERT MODE OFF,
CHARGE MODE NORMALLY ON
BATTERY CHARGER
CONVERTS 120V TO 12V
INVERTER
CONVERTS 12V TO 120V
INVERTER/CHARGER PERFORMS EITHER FUNCTION, NOT SIMULTANEOUSLY
INVERTER FUNCTION BYPASSED
ONLY THE THREE UPPER RIGHT CIRCUITS COMPRISING THE INVERTER BUS CAN OPTIONALLY BE SUPPLIED BY THE INVERTER, SEE CONDITIONS 4 & 5
"A" BUS
"INV" BUS
"B" BUS
TYPICAL "A" BUS LOADS
TYPICAL INV. BUS LOADS
TYPICAL "B" BUS LOADS
120V LOADS
120V SOURCE SELECTION
SHORE POWER #1
GEN SET
SHORE POWER #2
SHORE 1 30 AMPS
GENERATOR 50 AMPS
SHORE 2 30 AMPS
PARALLEL A & B
SWITCH POSITIONS
SHORE #2 CAN ONLY SUPPLY "B" BUS
"A" & "B" CIRCUITS CAN NOT BE SUPPLIED FROM INVERTER
PANELTRONICS
CONDITION 10:
AT DOCK,
SHORE POWER # 1& #2
CONNECTED
ENGINES RUNNING
ANTARES 44 ELECTRICAL POWER FLOW DIAGRAMS
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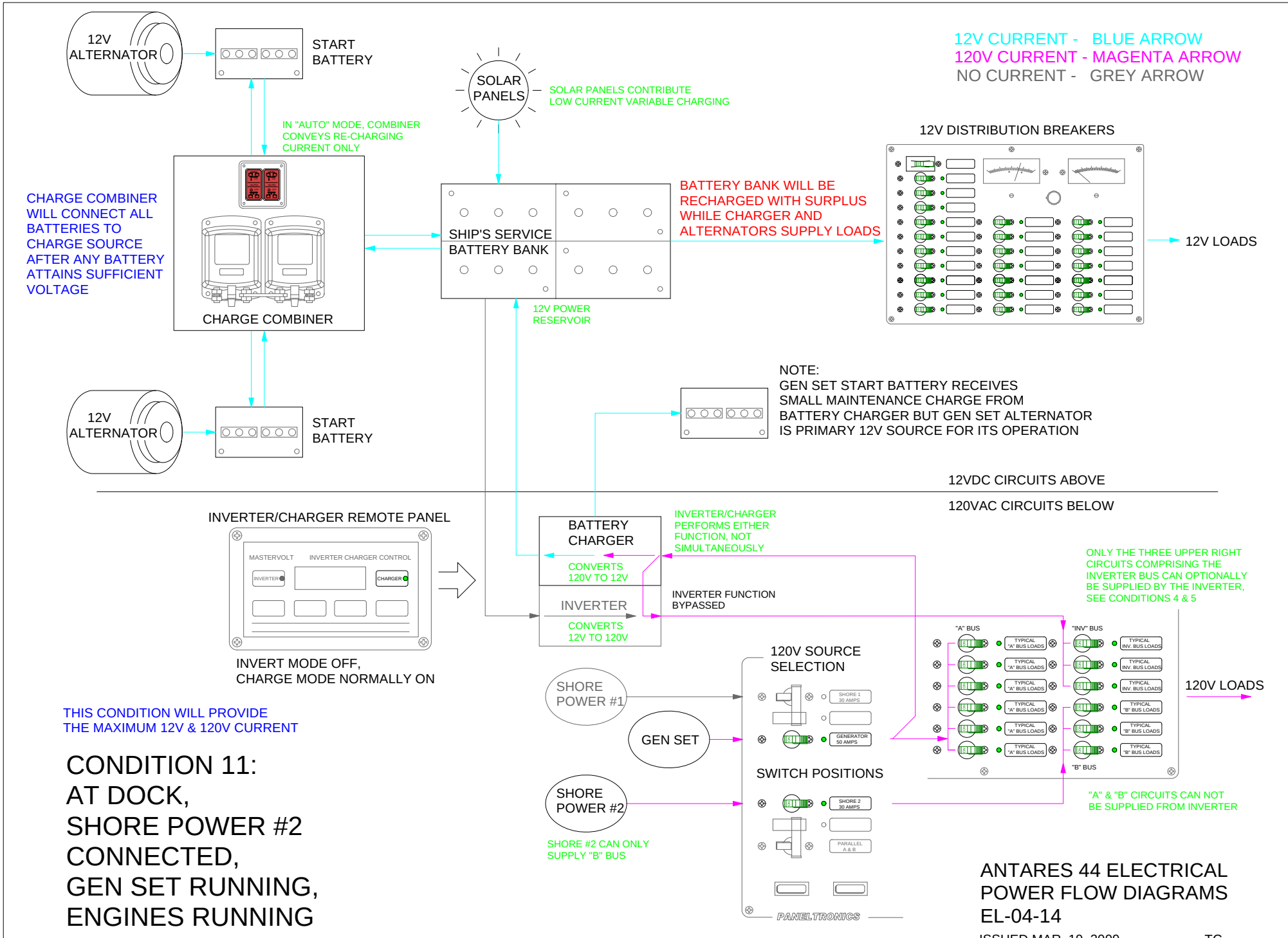
12V CURRENT - BLUE ARROW
120V CURRENT - MAGENTA ARROW
NO CURRENT - GREY ARROW
12V ALTERNATOR
START BATTERY
SOLAR PANELS
SOLAR PANELS CONTRIBUTE LOW CURRENT VARIABLE CHARGING
IN "AUTO" MODE, COMBINER CONVEYS RE-CHARGING CURRENT ONLY
CHARGE COMBINER WILL CONNECT ALL BATTERIES TO CHARGE SOURCE AFTER ANY BATTERY ATTAINS SUFFICIENT VOLTAGE
CHARGE COMBINER
SHIP'S SERVICE BATTERY BANK
BATTERY BANK WILL BE RECHARGED WITH SURPLUS WHILE CHARGER AND ALTERNATORS SUPPLY LOADS
12V DISTRIBUTION BREAKERS
12V LOADS
12V POWER RESERVOIR
12V ALTERNATOR
START BATTERY
NOTE:
GEN SET START BATTERY RECEIVES SMALL MAINTENANCE CHARGE FROM BATTERY CHARGER BUT GEN SET ALTERNATOR IS PRIMARY 12V SOURCE FOR ITS OPERATION
12VDC CIRCUITS ABOVE
120VAC CIRCUITS BELOW
INVERTER/CHARGER REMOTE PANEL
MASTERVOLT
INVERTER CHARGER CONTROL
INVERTER
CHARGER
INVERT MODE OFF,
CHARGE MODE NORMALLY ON
BATTERY CHARGER
CONVERTS 120V TO 12V
INVERTER
CONVERTS 12V TO 120V
INVERTER/CHARGER PERFORMS EITHER FUNCTION, NOT SIMULTANEOUSLY
INVERTER FUNCTION BYPASSED
ONLY THE THREE UPPER RIGHT CIRCUITS COMPRISING THE INVERTER BUS CAN OPTIONALLY BE SUPPLIED BY THE INVERTER, SEE CONDITIONS 4 & 5
"A" BUS
"INV" BUS
"B" BUS
TYPICAL "A" BUS LOADS
TYPICAL INV. BUS LOADS
TYPICAL "B" BUS LOADS
120V LOADS
120V SOURCE SELECTION
SHORE POWER #1
GEN SET
SHORE POWER #2
SHORE 1 30 AMPS
GENERATOR 50 AMPS
SHORE 2 30 AMPS
PARALLEL A & B
SWITCH POSITIONS
SHORE #2 CAN ONLY SUPPLY "B" BUS
"A" & "B" CIRCUITS CAN NOT BE SUPPLIED FROM INVERTER
PANELTRONICS
THIS CONDITION WILL PROVIDE THE MAXIMUM 12V & 120V CURRENT
CONDITION 11:
AT DOCK,
SHORE POWER #2
CONNECTED,
GEN SET RUNNING,
ENGINES RUNNING
ANTARES 44 ELECTRICAL POWER FLOW DIAGRAMS
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12V CURRENT - BLUE ARROW
120V CURRENT - MAGENTA ARROW
NO CURRENT - GREY ARROW

12V ALTERNATOR

START BATTERY

SOLAR PANELS

SOLAR PANELS CONTRIBUTE LOW CURRENT VARIABLE CHARGING

IN "AUTO" MODE, COMBINER CONVEYS RE-CHARGING CURRENT ONLY

CHARGE COMBINER NORMALLY CONNECTED BUT MAY DISCONNECT TO AVOID ALTERNATOR OVERLOAD DAMAGE OR CONSERVE START BATTERY CHARGE

CHARGE COMBINER

SHIP'S SERVICE BATTERY BANK

12V POWER RESERVOIR

BATTERY BANK IS CHARGED WITH SURPLUS CURRENT AFTER ALTERNATOR SUPPLIES LOADS

12V DISTRIBUTION BREAKERS

LIMIT 12V LOADS AS PRACTICAL

RUNNING ALTERNATOR WILL PROVIDE CHARGING FOR ALL BATTERIES THROUGH CHARGE COMBINER

12V ALTERNATOR

START BATTERY

NOTE:
GEN SET START BATTERY RELIES ON ITS OWN ALTERNATOR AS 12V SOURCE FOR ITS OPERATION

12VDC CIRCUITS ABOVE

120VAC CIRCUITS BELOW

INVERTER/CHARGER REMOTE PANEL

MASTERVOLT INVERTER CHARGER CONTROL

INVERTER CHARGER

INVERT MODE OFF,
CHARGE MODE NORMALLY ON

BATTERY CHARGER

CONVERTS 120V TO 12V

INVERTER

CONVERTS 12V TO 120V

INVERTER/CHARGER PERFORMS EITHER FUNCTION, NOT SIMULTANEOUSLY

INVERTER FUNCTION BYPASSED

ONLY THE THREE UPPER RIGHT CIRCUITS COMPRISING THE INVERTER BUS CAN OPTIONALLY BE SUPPLIED BY THE INVERTER, SEE CONDITIONS 4 & 5

"A" BUS

"INV" BUS

"B" BUS

TYPICAL "A" BUS LOADS

TYPICAL INV. BUS LOADS

TYPICAL "B" BUS LOADS

120V LOADS

120V SOURCE SELECTION

SHORE POWER #1

GEN SET

SHORE POWER #2

SHORE 1 30 AMPS

GENERATOR 50 AMPS

SHORE 2 30 AMPS

PARALLEL A & B

SWITCH POSITIONS

SHORE #2 CAN ONLY SUPPLY "B" BUS

"A" & "B" CIRCUITS CAN NOT BE SUPPLIED FROM INVERTER

PANELTRONICS

THIS CONDITION MAY ALSO PREVAIL IN THE EVENT THAT ONE ALTERNATOR HAS FAILED, ITS ENGINE WILL START AND RUN WITH THE BATTERY CHARGED BY THE OTHER ALTERNATOR

CONDITION 12:
ONE ENGINE RUNNING, 120V SOURCES OFF

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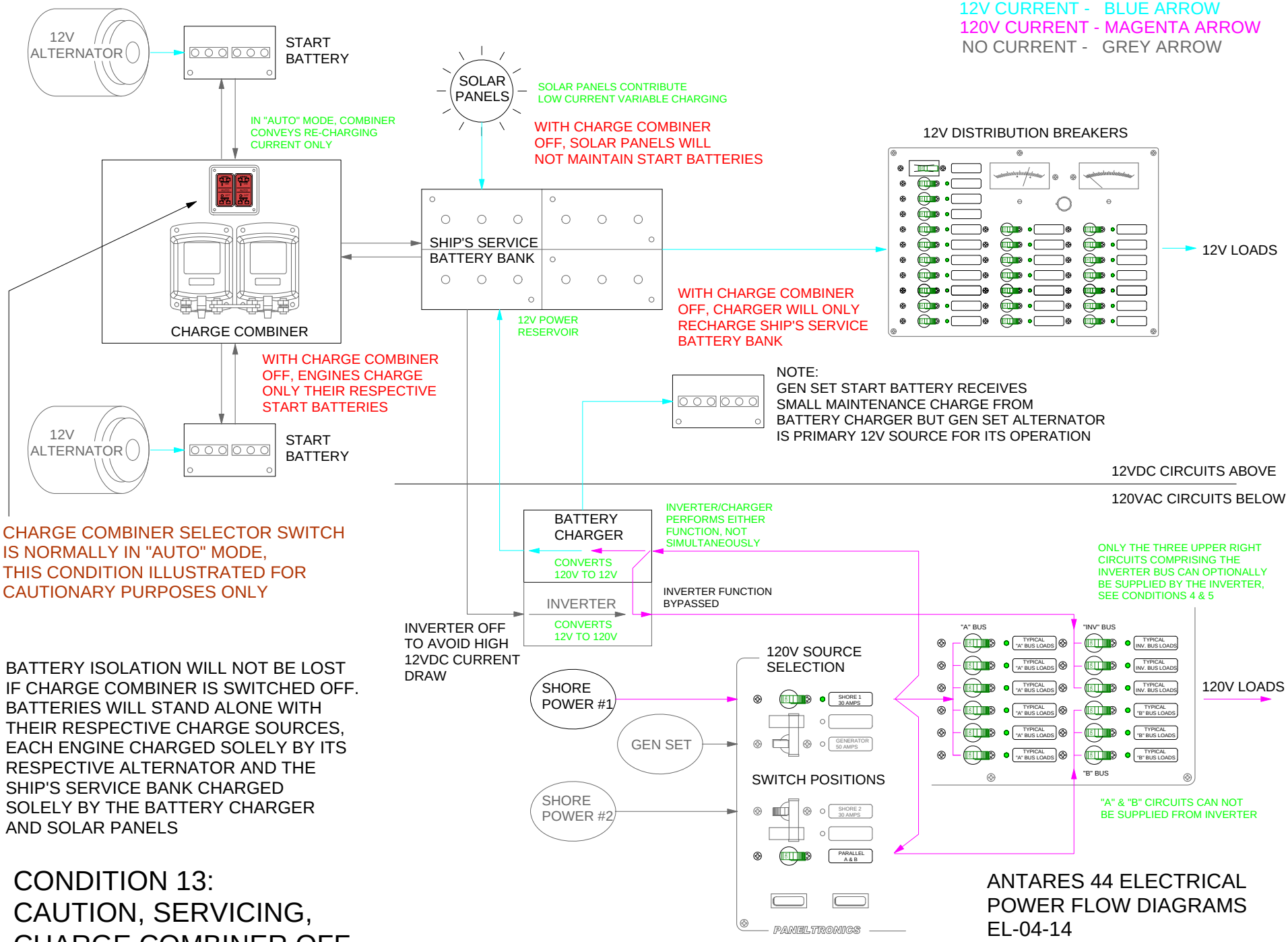
12V CURRENT - BLUE ARROW
120V CURRENT - MAGENTA ARROW
NO CURRENT - GREY ARROW
12V ALTERNATOR
START BATTERY
IN "AUTO" MODE, COMBINER CONVEYS RE-CHARGING CURRENT ONLY
SOLAR PANELS
SOLAR PANELS CONTRIBUTE LOW CURRENT VARIABLE CHARGING
WITH CHARGE COMBINER OFF, SOLAR PANELS WILL NOT MAINTAIN START BATTERIES
12V DISTRIBUTION BREAKERS
SHIP'S SERVICE BATTERY BANK
12V LOADS
CHARGE COMBINER
12V POWER RESERVOIR
WITH CHARGE COMBINER OFF, CHARGER WILL ONLY RECHARGE SHIP'S SERVICE BATTERY BANK
WITH CHARGE COMBINER OFF, ENGINES CHARGE ONLY THEIR RESPECTIVE START BATTERIES
12V ALTERNATOR
START BATTERY
NOTE:
GEN SET START BATTERY RECEIVES SMALL MAINTENANCE CHARGE FROM BATTERY CHARGER BUT GEN SET ALTERNATOR IS PRIMARY 12V SOURCE FOR ITS OPERATION
12VDC CIRCUITS ABOVE
120VAC CIRCUITS BELOW
CHARGE COMBINER SELECTOR SWITCH IS NORMALLY IN "AUTO" MODE, THIS CONDITION ILLUSTRATED FOR CAUTIONARY PURPOSES ONLY
BATTERY CHARGER
CONVERTS 120V TO 12V
INVERTER/CHARGER PERFORMS EITHER FUNCTION, NOT SIMULTANEOUSLY
INVERTER
CONVERTS 12V TO 120V
INVERTER FUNCTION BYPASSED
ONLY THE THREE UPPER RIGHT CIRCUITS COMPRISING THE INVERTER BUS CAN OPTIONALLY BE SUPPLIED BY THE INVERTER, SEE CONDITIONS 4 & 5
INVERTER OFF TO AVOID HIGH 12VDC CURRENT DRAW
120V SOURCE SELECTION
SHORE POWER #1
GEN SET
SHORE POWER #2
SWITCH POSITIONS
"A" BUS
"INV" BUS
"B" BUS
120V LOADS
"A" & "B" CIRCUITS CAN NOT BE SUPPLIED FROM INVERTER
PANELTRONICS
BATTERY ISOLATION WILL NOT BE LOST IF CHARGE COMBINER IS SWITCHED OFF. BATTERIES WILL STAND ALONE WITH THEIR RESPECTIVE CHARGE SOURCES, EACH ENGINE CHARGED SOLELY BY ITS RESPECTIVE ALTERNATOR AND THE SHIP'S SERVICE BANK CHARGED SOLELY BY THE BATTERY CHARGER AND SOLAR PANELS
CONDITION 13:
CAUTION, SERVICING,
CHARGE COMBINER OFF
ANTARES 44 ELECTRICAL POWER FLOW DIAGRAMS
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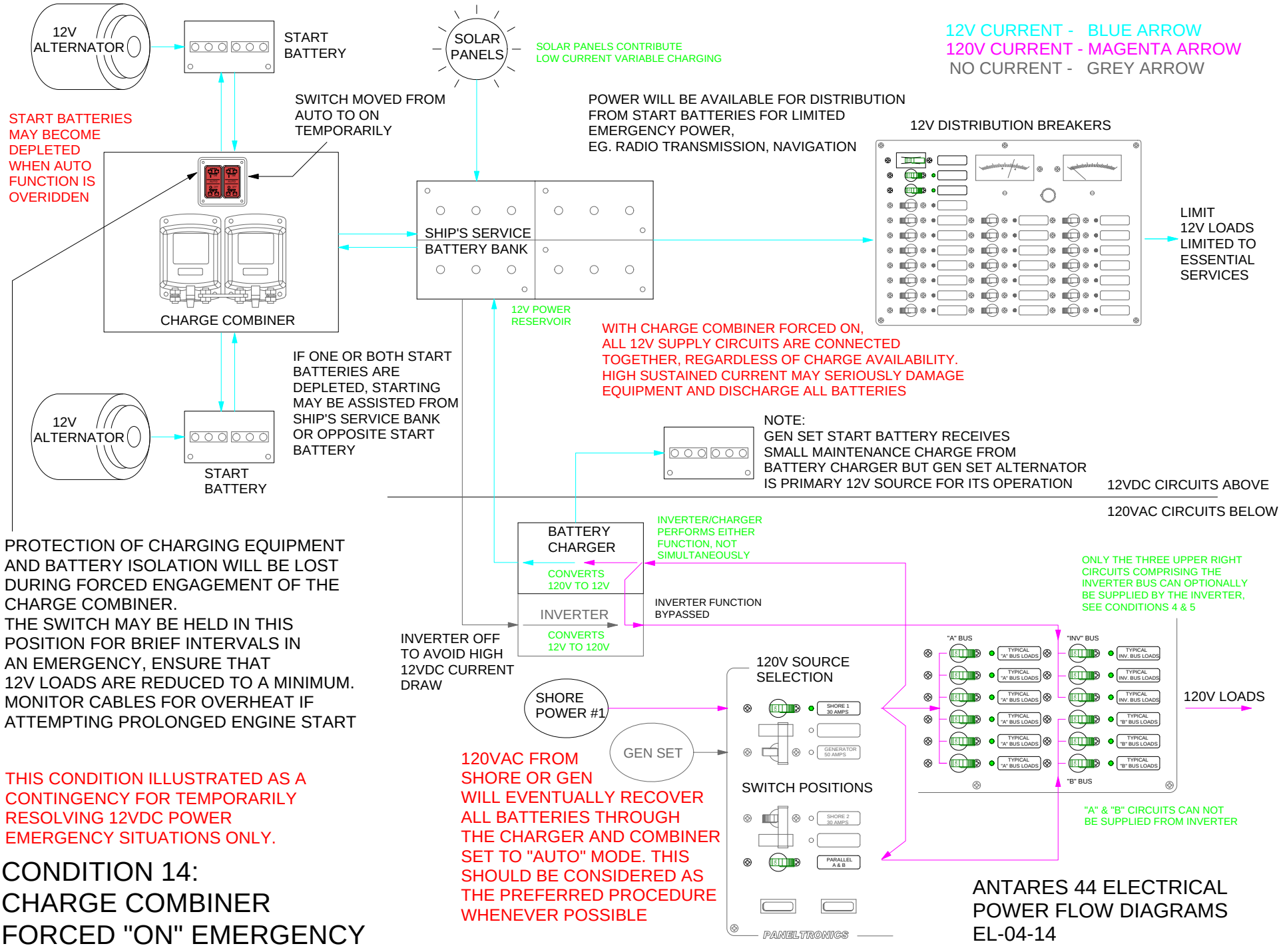
12V ALTERNATOR
START BATTERY
SOLAR PANELS
SOLAR PANELS CONTRIBUTE LOW CURRENT VARIABLE CHARGING
12V CURRENT - BLUE ARROW
120V CURRENT - MAGENTA ARROW
NO CURRENT - GREY ARROW
START BATTERIES MAY BECOME DEPLETED WHEN AUTO FUNCTION IS OVERIDDEN
SWITCH MOVED FROM AUTO TO ON TEMPORARILY
POWER WILL BE AVAILABLE FOR DISTRIBUTION FROM START BATTERIES FOR LIMITED EMERGENCY POWER, EG. RADIO TRANSMISSION, NAVIGATION
12V DISTRIBUTION BREAKERS
SHIP'S SERVICE BATTERY BANK
CHARGE COMBINER
12V POWER RESERVOIR
LIMIT 12V LOADS LIMITED TO ESSENTIAL SERVICES
WITH CHARGE COMBINER FORCED ON, ALL 12V SUPPLY CIRCUITS ARE CONNECTED TOGETHER, REGARDLESS OF CHARGE AVAILABILITY. HIGH SUSTAINED CURRENT MAY SERIOUSLY DAMAGE EQUIPMENT AND DISCHARGE ALL BATTERIES
IF ONE OR BOTH START BATTERIES ARE DEPLETED, STARTING MAY BE ASSISTED FROM SHIP'S SERVICE BANK OR OPPOSITE START BATTERY
12V ALTERNATOR
START BATTERY
NOTE: GEN SET START BATTERY RECEIVES SMALL MAINTENANCE CHARGE FROM BATTERY CHARGER BUT GEN SET ALTERNATOR IS PRIMARY 12V SOURCE FOR ITS OPERATION
12VDC CIRCUITS ABOVE
120VAC CIRCUITS BELOW
PROTECTION OF CHARGING EQUIPMENT AND BATTERY ISOLATION WILL BE LOST DURING FORCED ENGAGEMENT OF THE CHARGE COMBINER.
THE SWITCH MAY BE HELD IN THIS POSITION FOR BRIEF INTERVALS IN AN EMERGENCY, ENSURE THAT 12V LOADS ARE REDUCED TO A MINIMUM. MONITOR CABLES FOR OVERHEAT IF ATTEMPTING PROLONGED ENGINE START
BATTERY CHARGER
CONVERTS 120V TO 12V
INVERTER
CONVERTS 12V TO 120V
INVERTER/CHARGER PERFORMS EITHER FUNCTION, NOT SIMULTANEOUSLY
INVERTER FUNCTION BYPASSED
INVERTER OFF TO AVOID HIGH 12VDC CURRENT DRAW
ONLY THE THREE UPPER RIGHT CIRCUITS COMPRISING THE INVERTER BUS CAN OPTIONALLY BE SUPPLIED BY THE INVERTER, SEE CONDITIONS 4 & 5
120V SOURCE SELECTION
SHORE POWER #1
GEN SET
SHORE 1 30 AMPS
GENERATOR 50 AMPS
SWITCH POSITIONS
SHORE 2 30 AMPS
PARALLEL A & B
"A" BUS
"INV" BUS
"B" BUS
TYPICAL "A" BUS LOADS
TYPICAL INV. BUS LOADS
TYPICAL "B" BUS LOADS
120V LOADS
"A" & "B" CIRCUITS CAN NOT BE SUPPLIED FROM INVERTER
THIS CONDITION ILLUSTRATED AS A CONTINGENCY FOR TEMPORARILY RESOLVING 12VDC POWER EMERGENCY SITUATIONS ONLY.
120VAC FROM SHORE OR GEN WILL EVENTUALLY RECOVER ALL BATTERIES THROUGH THE CHARGER AND COMBINER SET TO "AUTO" MODE. THIS SHOULD BE CONSIDERED AS THE PREFERRED PROCEDURE WHENEVER POSSIBLE
PANELTRONICS

CONDITION 14: CHARGE COMBINER FORCED "ON" EMERGENCY

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